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The president of the Communications Workers of America makes a New Economy case for organized labor. Page 34



AFTER 'THE LEAP'

How one man's jump into e-commerce affected life with his family. A Q&A with author Tom Ashbrook. Page 52

BEFORE THE BOOM

Companies need to prepare for the coming explosion in handheld wireless technology. Page 80

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OCTOBER 9, 2000 ■ VOL. 34 ■ NO. 41 ■ \$5. COPY

FIRMS FEAR FEDS' SECURITY RULES

Financial services wary of costs, little flexibility

BY PATRICK THIBODEAU
WASHINGTON

Federal regulators are developing information security rules for the financial services industry to protect customer data. But executives at affected banks, brokerages and insurance companies say mandating stringent security requirements — such as encrypting stored or transferred data — will increase their costs and potentially impair data-sharing arrangements they have with business partners.

Corporate legal, business and information technology departments will all be in-
Security Rules, page 101

In the Works

Government regulators are preparing information security rules for financial services firms as required by last year's financial modernization legislation, the Gramm-Leach-Bliley Act. The rules may require a number of actions, including the following:

- Appointment of corporate **chief information security officer**
- **Penetration testing** by an independent third party or an internal independent party
- **Encryption of data** in some instances
- Increased responsibility for checking an outsourcer's **data security practices**

Note: Federal officials can issue the rules as either regulations or guidelines, with the latter giving financial services firms more flexibility.

ORACLE GOES ON PRICING DEFENSIVE

CEO Ellison claims customers are happy with new model; users still beg to differ

BY DAN VERTON
SAN FRANCISCO

Oracle Corp. CEO Larry Ellison last week disputed reports that users are unhappy with his company's new capacity-based pricing scheme for its flagship database product.

Yet in interviews last week with more than a dozen Oracle users, *Computerworld* again found that, while some users say they are willing to live with the current pricing structure, many are unhappy. And as re-

ported here Sept. 18, some are willing to consider alternatives to letting Oracle take advantage of its market dominance.



ORACLE CEO LARRY ELLISON: "The market has voted"

In an interview at Oracle's OpenWorld conference, Ellison defended what he called Oracle's response to the demands of the market. He argued that Oracle isn't the only company that uses capacity-based pricing and that skyrocketing sales figures are proof that customers are happy.

"People are buying more than ever," said Ellison, adding that sales for Oracle8i grew by 32% last year. "The market has voted. By and large, the customers really like it." Research firm International Data Corp. in Framingham, Mass., reported last year that Oracle's share
Oracle, page 16

NAME YOUR PROBLEM AT PRICELINE

Gas, grocery shutdown just latest woe for site

BY MICHAEL MEEHAN

William Shatner's offbeat commercials for Priceline.com took the site where no online auctioneer had gone before, but the company's stock has fallen from a high of \$165 to less than \$6 per share — a cautionary tale for would-be electronic retailers, say analysts.

In the past month, Norwalk, Conn.-based Priceline.com Inc. has found itself kicked out of the Better Business Bureau of

Connecticut for a failure to respond to customer complaints and under investigation by Connecticut's attorney general. The investigation is exploring whether Priceline has fully and accurately disclosed product terms, prices and conditions.

In the past four months, Priceline's stock has fallen from \$40 per share to \$5.81 on the Nasdaq ticker, as of last Thursday. That same day, Priceline announced it was shutting down its grocery and gasoline sales operations.

Analysts fault the company
Priceline, page 101

THE NEW GOVERNMENT OF NUNAVUT - a remote, windswept Canadian territory straddling the Arctic Circle - is getting IT help from consultant Nancy Chisholm



PHOTOS BY KATHLEEN MELYMUKA

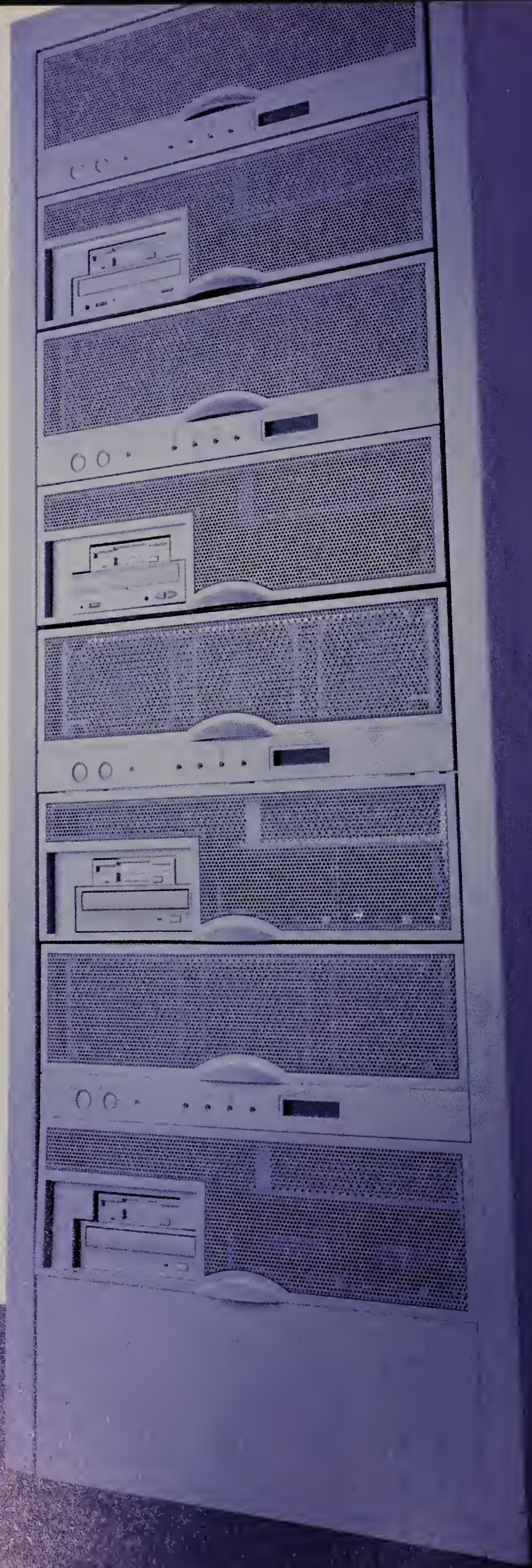
STARTING COLD



Chisholm

Think you've got problems? Meet the gritty, resourceful folks setting up the IT infrastructure for the brand-new government of Nunavut. It's a vast arctic territory that's icebound most of the year and accessible only by air, reports Kathleen Melymuka. The challenges include blizzards that have shut down operations for 10 days, unreliable satellite communications and the near impossibility of recruiting skilled IT people to work in the frozen tundra.

Story begins on page 54.



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Haptic technology adds the sensation of touch to computer peripherals, offering greater feedback and new potential for training and simulation applications. Page 78



WHEN THE BOSS IS HALF YOUR AGE

Increasingly, younger - much younger - information technology professionals are finding their way to the very top of organizations. This trend is creating some challenging cultural issues for managers and staff alike. Page 88

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ONLINE



In an exclusive column for *Computerworld.com's E-Commerce Community*, House Majority Leader **Dick Armey** (R-Texas) writes that the

time might have come to discard the Federal Trade Commission's "fair practices" guidelines for e-commerce Web sites. www.computerworld.com/ecommerce

Earnings. Mergers. Executive reshuffles. Keep up with the latest industry news on our new **Financial** page. www.computerworld.com/finance

Online managing editor **Sharon Machlis** kicks off the **E-Commerce Chronicles**, in which reporters, editors and readers share the joys and frustrations of shopping online. www.computerworld.com/ecommerce

more stuff online? Because retailers make it too difficult for them, he says.

53 **PETER G. W. KEEN** lists four questions to help you decide whether your company is truly focused on customers.

102 **FRANK HAYES** tells how Walmart.com is gambling by rewriting the playbook on redesigning retail Web sites.

AT DEADLINE

Imation Considers Restructuring

Data-storage systems maker Imation Corp. said it will miss analysts' expectations for earnings for the quarter ended Sept. 30. It also said it's exploring alternatives that include financial restructuring, stock repurchases and potential mergers. The Oakdale, Minn.-based company warned that operating income, excluding restructuring charges and write-offs, will be 16% below the \$346 million in sales it registered during the same period last year.

Marimba to Post Third-Quarter Loss

Marimba Inc. in Mountain View, Calif., said it expects revenue for the third quarter ended Sept. 30 to be in the range of \$10 million to \$10.2 million, with a net loss of 13 to 17 cents per share. Analysts surveyed by First Call/Thomson Financial in Boston had predicted earnings of 4 cents per share. The software maker blamed the loss on its inability to close several deals.

Foreign Ownership Bill Opposed by Labor

The U.S. Chamber of Commerce and two of the nation's largest labor unions, the AFL-CIO and the Communications Workers of America, last week expressed opposition to proposed legislation that would place new restrictions on foreign investment in U.S. telecommunications firms. They said they oppose the legislation because it obstructs foreign investment at a time when the U.S. is working to lower trade barriers and open markets worldwide.

Short Takes

San Mateo, Calif.-based **NAPSTER INC.** continues to grow in popularity, according to **MEDIA METRIX INC.** Usage grew from 1.1 million users in February to 6.7 million users in August, said the New York-based research firm. . . . The much-anticipated Version 2.4 of the Linux kernel will take at least another two months to complete, Linus Torvalds, creator of the open-source operating system, said Friday.

IBM's New 64-Bit Mainframe Leads to Effort to Rebrand, Change Pricing Model

IBM moves to take on thriving rivals

BY JAIKUMAR VIJAYAN

IBM last week launched its first 64-bit mainframe computer amid a sweeping server rebranding effort aimed at improving the company's market position against faster-growing rivals.

The company also announced new mainframe software pricing options, which could reduce software license charges for corporations if other vendors are willing to agree to IBM's proposed changes, as some appear to be (see story at right), analysts said.

Under the new branding campaign, all IBM servers will be sold under the same common brand name of eServer, with different model names distinguishing the various IBM server platforms.

The rebranding should narrow the differences among IBM's various hardware platforms, said John Ciko, CIO at CommerceQuest Inc., a Tampa, Fla.-based application hosting and integration service provider. "I think they are tying all their platforms closer and making it look like one server family instead of a disparate set [of technologies]," Ciko said.

IBM's move comes at a crucial time for the company, said Sam Albert, an independent consultant in Scarsdale, N.Y. Rivals such as Sun Microsystems Inc. have been able to grow faster because their focus on a single line of products has allowed them to communicate better with users. In contrast, the complexity of IBM's server lines has tended to confuse users, Albert said.

Meanwhile, the new mainframe, called the z900, should offer users substantially better performance and more application management capabilities than IBM's current Generation 6 mainframes, Albert said.

The 16-processor z900 is based on IBM's first 64-bit mainframe chips and delivers approximately 2,500 MIPS of performance, according to IBM.

The servers support features — including much larger real memory support, dynamic load-balancing and the ability to create thousands of "virtual servers" within a single physical server — optimized for fast-growing applications such as e-commerce and enterprise resource planning, according to IBM.

The ability to create multiple virtual servers means users can have "gobs of Linux servers running within one partition," for instance, said Bill O'Donnell, a senior information technology consultant with the Wisconsin state government in Madison.

A crucial aspect of the new server, which IBM is pushing

as the ultimate e-commerce engine, is its support for new software-pricing models.

IBM has introduced a new Workload License Charges pricing model for users running applications on the z/OS operating system on the z900 server. Under it, users will be charged for software based on actual average usage — measured in four-hour time periods — rather than the size of the overall servers, said IBM program director Pete McCaffrey.

This model means users can buy software licenses based on actual usage rather than on projected peak usage, said Judith Hurwitz, president of Hurwitz Group Inc. in Framingham, Mass.

This kind of flexibility "mirrors the need of e-business applications," which are often marked by sudden, unpredictable spikes in transaction loads, she said.

Making this sort of licensing possible is IBM's new License Manager technology on the z900 that will let users tie application workloads to specific processors or sets of processors in a way that is verifiable and measurable by both users and software vendors.

"It's been a big issue for a long time," said O'Donnell. "It'll be real interesting to see what this means to us in physical dollars." ▀

AT A GLANCE

IBM's z900

- IBM's first 64-bit mainframe
- Supports as many as 16 processors
- Has a peak performance of about 2,500 MIPS
- Supports up to 24G bit/sec. of I/O bandwidth, compared with 8G bit/sec. on current Generation 6 mainframes
- Supports dynamic workload-balancing capability
- New technology lets users create thousands of "virtual servers" within one physical box
- New License Manager technology monitors software usage

Japan Quake Tests Telecom

BY MARTYN WILLIAMS
TOKYO

Reports from some of Japan's major electronics and semiconductor manufacturers suggest that their factories suffered little or no damage from a massive earthquake that hit a large area of western Japan Friday afternoon, although the region's telecommunications systems were put under a heavy load.

The earthquake's magnitude was 7.3, according to Japan's Meteorological Agency.

Fujitsu Ltd., which has an LCD factory in Yonago, the city nearest the epicenter, said

staff evacuated the plant when the earthquake struck, but there was apparently no damage. Other plants in western Japan belonging to Fujitsu, as well as those of Hitachi Ltd., Sanyo Electric Co. and NEC Corp., were undamaged, said spokesmen for those firms.

DDI Corp., a major long-distance and data communications operator, said part of its fiber-optic backbone was severed and it couldn't provide service to some customers. ▀

Williams writes for the IDG News Service.

Vendors Back New Model

Leading software vendors such as BMC Software Inc., Candle Corp. and Computer Associates International Inc. have agreed to support IBM's new Workload License Charges pricing model for z/OS software running on the z900 mainframe server.

Z/OS is the just-released version of what was formerly known as the OS/390 operating system. Z900 is a new mainframe in what was originally called the S/390 series.

Under Workload License Charges, software fees will be based on average use over four-hour periods rather than on overall capacity of a system. Making such usage measurable is the new License Manager technology that IBM has incorporated into its z900 server.

Such usage-based pricing is very different from typical mainframe software licenses, which are based on the size of a system — generally, the larger the system, the more users pay for the software.

Under the new model, Candle, for instance, will make the pricing available on all its software for IBM environments such as CICS, DB2 and IMS. IBM customers will be able to license Candle software for just that portion of a z9000 server on which it's actually running and pay based on that capacity.

Similarly, under BMC's Workload License Pricing model, users won't be charged software fees for any extra hardware capacity they may have, until it's actually used, according to a BMC statement.

Vendor support is going to be crucial if the new licensing model is to succeed, said John Phelps, an analyst at Gartner Group Inc. in Stamford, Conn.

One of the reasons most vendors have balked at the idea of offering usage-based software fees is the lack of tools that would allow such measurement. With IBM's standards-based License Manager technology, they "don't have that excuse," said Dan Kaberon, a Parallel Sysplex manager at Hewitt Associates LLC, a human resources outsourcing in Lincolnshire, Ill.

"If they are fair-minded players concerned about the long-term viability of the [mainframe], they should adopt it," he said. — Jaikumar Vijayan

House, Senate Vote to Increase H-1B Visa Cap

But need for IT workers exceeds new cap

BY PATRICK THIBODEAU
WASHINGTON

CONGRESS has boosted the H-1B visa cap and made it easier for workers under

the program to change jobs. But the cap increase, which President Clinton is expected to approve, may not make a big dent in the information technology workforce shortage.

Under heavy pressure from the high-tech industry, the House and Senate last week voted to increase the cap of the H-1B visa program to 195,000 over the next three fiscal years. The program allows skilled foreign workers into the U.S. for up to six years.

The cap was due to fall to 107,500 for the fiscal year that began Oct. 1 and to 65,000 the following year.

The problem is that by the end of this year, some 850,000 IT jobs will be open, said Peter Burris, an analyst at Meta Group Inc. in Stamford, Conn. Moreover, vendors, not end-user companies, will hire most of the H-1B visa workers; many visa holders have the deep technical skills vendors want, as well as a desire learn how high-tech businesses work, Burris explained. "But the more bright folks that the IT universe can get access to, the better for everybody," he said.

High-tech companies like Texas Instruments Inc. in Dallas hire H-1B visa holders. The company has 750 employees working under the program, out of a domestic workforce of 23,500, and the cap increase will help, the company said.

"By raising the cap, it's just allowing a greater number of folks to be in the [labor] pool from which we can draw," said Dan Larsen, a TI spokesman.

A change in the program that was important to TI has to do with permanent residency. "Our intention when we hire [H-1B workers] is to make them permanent residents, because these are people with skills that we really want to retain," said Paula Collins, director of

New Cap

Congress has raised the H-1B visa cap, but White House approval is still needed.

CURRENT LAW: The cap was set to decline from 115,000 to 107,500 in the fiscal year that began Oct. 1. It was set to drop to 65,000 in the following year.

NEW PLAN: The cap will be raised to 195,000 annually over the next three years.

government relations for human resources at TI.

The legislation will allow H-1B holders to stay in the U.S. for up to seven years if they have a pending application for a green card, the employment-based permanent visa, said Collins.

The legislation also makes it easier for H-1B visa workers to switch jobs, said Arthur L. Zabenko, a New York attorney and legal editor of the online newsletter "Immigration Daily."

Under present law, an alien in the program can't start a new job until the U.S. Immigration and Naturalization Service approves the application, a process that could take months. Under the proposed law, the alien could begin work at a new job as soon as the application is filed. "It gives employees much more flexibility," said Zabenko.

Norman Matloff, a professor of computer science at the University of California at Davis, who has argued that the H-1B program is used to discriminate against older workers and keep wages down, said the cap increase will exacerbate those problems. ▀

Government Privacy Concerns Extend To Wireless Technology and Databases

FTC official says regs may go beyond online transactions

BY PATRICK THIBODEAU
WASHINGTON

Legislative and regulatory interest in privacy may soon broaden beyond online transactions to include wireless networks and off-line databases, according to Jodie Bernstein, the U.S. Federal Trade Commission's (FTC) top consumer protection official.

Wireless technology raises unique issues, said Bernstein, speaking at a U.S. Chamber of Commerce e-commerce forum last week. "How do you put conspicuous disclosures on a screen this big?" she said, gesturing with her hand to illustrate the small screen size of a handheld wireless device.

Bernstein said investigating the application of privacy rules on wireless commerce is "likely to be the next thing we have to do." One thing the FTC wants to avoid is a "move in the direction of a regulation that would foreclose a new technology," she said.

But Robert Rothman, director of legal affairs at e-GM, General Motors Corp.'s e-commerce division, said privacy rules in wireless networking raise many questions.

"There are very, very complex relationships here with content providers, content

aggregators, service providers — and the privacy policies of each can differ," said Rothman, who also spoke at the e-commerce forum. "How do we disclose all of that orally?"

Detroit-based GM has been moving into content delivery via its OnStar system, a wireless voice-communication system installed in vehicles that can provide directions, emergency help, reservations services and other features (see related story, page 8).

"Are you going to be able to do the same kind of disclosures that are done online? I don't think so," said Rothman.

Bernstein said the FTC has looked at many off-line, sector-specific database issues, especially in the financial area in response to the Gramm-Leach-Bliley Act, the financial modernization bill. A rising question, she said, is whether privacy legislation will develop that "will comprehensively cover off-line and online issues, together."

Andrew Shen, a policy analyst at the Electronic Privacy Information Center in Washington, said he also expects that more attention will be given to a comprehensive approach to privacy protection. "To a large extent, it doesn't make sense to make a distinction between two types of data. My name is my name," he said.



JODIE BERNSTEIN of the FTC: Wireless privacy issues may be regulators' next big issue

For businesses, a comprehensive set of privacy rules may untangle some of the problems a diverse company may now face when it has to comply to different sector-specific rules, said Shen. ▀

DOJ, Microsoft Spar Over Pace of Appeal

BY PATRICK THIBODEAU
AND TODD R. WEISS
WASHINGTON

Having lost its bid last month to take the Microsoft Corp. antitrust case directly to the Supreme Court, the U.S. government is now fighting to ensure that the case gets a speedy appeals review.

Microsoft asked the U.S. District Court of Appeals for an approximately five-month timetable for written briefs. The U.S. Department of Justice and 19 states involved in this case

want to wrap up the written appeals process by year's end.

Saying that the case "threatens Microsoft's very existence," the company is accusing the government of trying to "short-circuit" the appeals process. The appeals court will determine the written briefing schedule. The court is expected to act swiftly and may release its order this week.

The government's goal, say legal experts, is for the appeals court to complete its review by next fall, in time for the next

session of the Supreme Court.

Microsoft has also asked that the appeals court guidelines of 14,000 words for primary briefs be expanded to 56,000 words because of the case's complexity. The government said principal briefs should be limited to 24,000 words.

In June, U.S. District Court Judge Thomas Penfield Jackson ordered that Microsoft be split in two and subjected to behavioral remedies, which have been put on hold until the appeals process is completed. ▀

Lexus Licenses GM's OnStar GPS Service

Impact on year-end sales hard to predict

BY LEE COPELAND

AFTER YEARS of quiet talks with General Motors Corp., Toyota Motor Corp. this week will unveil its 2001 Lexus luxury sedans equipped with its rival's OnStar in-vehicle communications service.

The licensing deal with Toyota puts GM solidly ahead of the automotive pack in developing in-vehicle Web and cellular communications systems. It should also help GM inch closer to its \$61 million year-end revenue target for OnStar sales. But the pact is expected to have little near-term impact on Toyota's Lexus sales in the U.S., Lexus dealers said.

GM launched OnStar, a satellite-based Global Positioning System (GPS) mapping and cellular calling service three years ago.

Aichi, Japan-based Toyota will begin shipping the 2001 Lexus LS 430 to its dealers on Thursday. The restyled vehicle has a suggested price tag of \$54,000. GM's OnStar service, which Toyota has rebranded as Lexus Link, is available as a factory-installed option at a cost of \$1,215.

Using Lexus Link, calls from drivers will be routed through GM's call centers and fielded by specially trained service representatives. The Lexus Link basic service package costs \$215 per year and includes theft notification and roadside assistance. The premium package, priced at \$413 annually, also includes concierge services and directions.

But Toyota is still test-driving the service. Lexus Link will be available as a factory-installed option on just 15% to 30% of the 25,000 LS 430s slated to roll off the production lines for the 2001 model year.

Next month, GM will begin a national rollout of its Virtual Advisor — a voice-activated Internet news, e-mail and cellular calling service — on 32

of its 54 vehicle lines, including Cadillac and Oldsmobile.

Toyota won't participate in those services.

Although Toyota executives anticipate a 93% increase in orders from the 14,000 Lexus LS 400s sold last year, dealers said Lexus Link will have a marginal sales impact, if any.

"[Lexus Link is] a nice fea-

ture, but I don't think people would not buy the vehicle because we did not have it," said Stefan Smith, president of Lexus of Memphis.

Smith said his dealership has already presold 70 LS 430s, 40% of which were fully equipped with the Lexus Link service.

"People who buy early want the whole shebang," he said.

Tom Rudnai, general manager at Longo Lexus in El Monte, Calif., said it's too early to de-

New Tools Help Suppliers Create Digital Catalogs

Software will help populate e-markets with content

BY JULIA KING

Astronomical numbers are a mainstay in the business-to-business e-commerce arena. Analysts regularly forecast electronic transactions that will total in the trillions of dollars by 2004. Likewise, virtually every new Internet marketplace promises to bustle with big buyers who represent billions in spending power.

Yet conspicuously absent from all the hype are the tens of thousands of suppliers predicted to populate the marketplaces. The problem is that the primary selling tool for scores of suppliers remains a dog-eared paper catalog, which has yet to go digital, much less be uploaded for use on an electronic exchange.

"The thing that is missing from all of these exchanges is the critical mass of second- and third-tier suppliers," said Joshua Greenbaum, an analyst at Hurwitz Group Inc. in Framingham, Mass.

"It can cost suppliers anywhere from 50 cents to a few bucks per product to get an [electronic] catalog going," Greenbaum noted. Conse-

quently, "content is a massive issue for all e-marketplaces. It's something that should have been thought of a long time ago but wasn't because things were moving so fast."

But now, new software tools designed to help suppliers assemble electronic catalogs and keep them updated are beginning to hit the market.

The vendors offering these tools all specialize in software that can aggregate and standardize unstructured product data from diverse sources,

OnStar on a Roll

GM hopes to generate \$61 million in revenue by year's end from its in-vehicle communications service:

AUTOMAKER	OFFERS ONSTAR IN	SUBSCRIBERS
General Motors	32 of 54 vehicle lines	400,000
Toyota	Lexus LS 430	3,700 to 7,500 projected
Honda	Acura RL Sedan	Not available until 2002 model year

termine if the service will have an impact on sales, given the timing of the announcement.

Officials at Detroit-based GM said more than 400,000 car owners have subscribed to the OnStar service since its inception. The Toyota deal and a

similar pact reached in May with Tokyo-based Honda Motor Co. to offer the OnStar branded system in the 2002 Acura RL Sedan should help the world's largest automaker reach its OnStar revenue forecast of \$61 million this year. ▽

then translate it into a format usable in an electronic marketplace. But there are also several differentiators.

Austin, Texas-based Liaison Technology's tool, for example, is geared toward business users. It allows them to drag and drop product data from PDF files, Web pages and other sources for placement in an electronic catalog. The catalog can then be automatically updated based on business rules set by the user.

SparkOnline.com, an electronic marketplace that caters to advertising agencies, uses the Liaison tool to collect data from the Web pages of the 1,900 publishers included in its online catalog. Previously, SparkOnline had six to eight

employees call publishers for the necessary data, which had to be keyed into the computer system and then updated manually on a regular basis.

"Now, we expect one person to manage content," said Joel Davis, vice president at the San Francisco-based electronic marketplace. "If there's a change [in a publisher's data], we're alerted, and it updates our catalog automatically."

Poet Software in San Mateo, Calif., takes a supplier self-service approach to electronic catalogs. Suppliers use the vendor's tools to pull legacy data into a single master catalog, which can then be uploaded to an online marketplace and continually updated automatically via business rules set by the supplier.

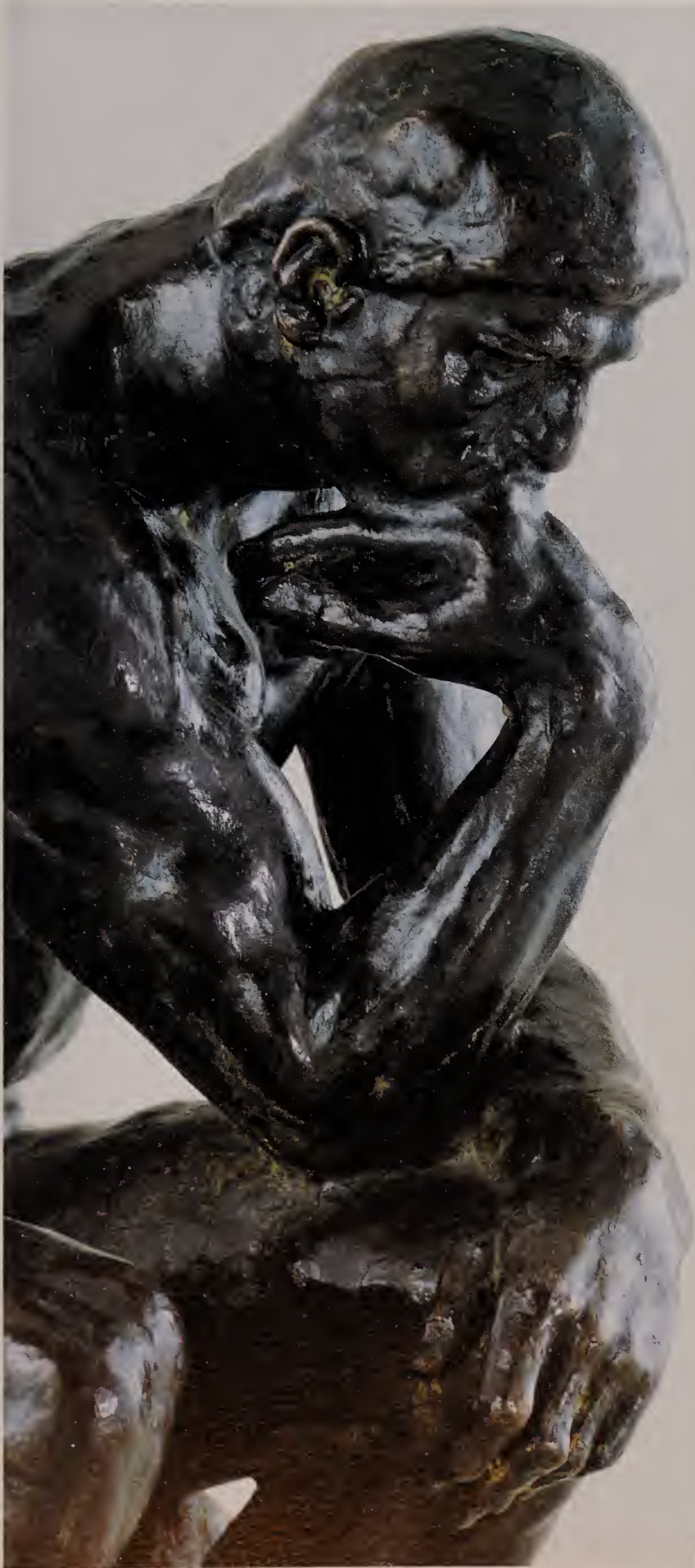
Looking ahead, some analysts said they expect an increasing number of Internet marketplaces to offer suppliers electronic catalog services as a way to quickly build liquidity on their exchanges.

"E-marketplace software vendors initially went after the big pockets on the buy side. They'd sell their technology to major purchasers with deep pockets, then rely on the velvet hammer approach — which is access to those buyers — to get suppliers in," said Jon Derome, an analyst at The Yankee Group in Boston.

"But that velvet hammer approach has so far worked only for the first-tier suppliers," Derome said. "The point we're at now is to take the next level of suppliers online." ▽

E-Catalog Tools

VENDOR	PRODUCT	HIGHLIGHTS
Liaison Technology	Content Exchange software	Aggregates and standardizes product data for uploading to e-marketplaces.
Poet Software	eCatalog Suite	Pulls legacy product data into a master electronic catalog, which can be customized for different online customers.
SoftQuad Software Ltd.	MarketAgility 1.0	Targeted to B2B electronics e-marketplaces; enables nontechnical users to author, manage and customize XML-based catalogs for uploading to e-marketplaces.
North Systems Inc.	North Supplier	Lets suppliers post catalog content to different procurement systems. Provides differentiated access to customers by creating punch-outs to custom-branded Web sites.



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BRIEFS

Nortel to Manage
C&W Networks

Cable & Wireless PLC (C&W) in London and Nortel Networks Corp. in Brampton, Ontario, announced last week that Nortel will create and manage a C&W voice over IP backbone in Europe and North America. The deal will add \$1.5 billion to Nortel's coffers during the next 10 years. C&W will migrate its business telephone operation from standard switched-voice services to voice over IP and will transfer existing voice network employees to Nortel in the next three years, company officials said.

Corel Gets Microsoft
Money, New Leader

Twenty-four hours after announcing a \$135 million investment from Microsoft Corp., Ottawa-based software maker Corel Corp. announced that Derek Burney has been named as its new leader. Burney, who has been interim CEO and president since the resignation in August of Corel founder and longtime CEO Michael Cowpland, played a key role in the negotiations that led to Microsoft's investment.

Papows to Head
Start-up Maptuit

Former Lotus Development Corp. CEO Jeff Papows is back in the game. Last week, Maptuit Corp., where Papows was named to the board of directors this summer, announced that he will be the Burlington, Mass.-based company's CEO. Maptuit does address matching, route generation, step-by-step directions and map rendering for wireline and wireless devices.

Napster Case Heard

A U.S. federal appeals court last week heard arguments from both sides in the Napster Inc. copyright-infringement case but didn't rule on the injunction barring the file-sharing music Web site from operating. The three-judge panel of the Ninth Circuit Court of Appeals in San Francisco could take months to rule on whether San Mateo, Calif.-based Napster will have to shut down.

Despite Odds, Georgia
Hits It Big With ERP System

Communication brings project in on time

BY MARC L. SONGINI

IT WAS A BIG BANG project — going live with an enterprise resource planning (ERP) system throughout an entire organization at once. Employees even had to camp out at work in sleeping bags at certain crucial moments.

But it seems to have been worth the struggle. It's been a year since the state of Georgia's Department of Administrative Services (DOAS) completed its massive PeopleSoft Inc. ERP software implementation, and despite numerous obstacles the project was finished on time and on budget, at \$52 million.

"They got a great deal," given all the modules implemented, said David Dobrin, an analyst at Cambridge, Mass.-based consultancy Surgency Inc. Moreover, it only took a year and a half, while ERP projects in other states the size of Georgia — which has a budget

of \$24 billion — often take two to five years. The DOAS system now supports 5,000 end users through 80 agencies.

DOAS employees attributed the success to constant communication via a Web page, e-mail, instant messaging and other means, as well as face-to-face meetings and extensive planning. The project also had support from the governor's office, giving DOAS managers the confidence to make rapid decisions, said Ethan Meadows, an analyst at The Hunter Group Inc. in Baltimore, which worked on the integration. But, DOAS managers said, the project worked because it had to.

"We had no choice," said Sue Armstrong, assistant director of information technology at the DOAS. "Failure was not an option."



DOAS's Sue Armstrong: "Failure was not an option"

The DOAS provides financial and human resources services such as accounting and payroll for dozens of key state agencies. Needing to come into compliance with the Generally Accepted Accounting Principles and, more important, brace itself for year 2000, the DOAS started rewriting its legacy applications in 1991.

However, that effort was only halfway done when the Y2k deadline suddenly loomed all too close, so the DOAS decided to buy a standardized system rather than retool the existing one, said Armstrong.

Untying the Knot

Kicked off in March 1998, the initiative, dubbed the "Phoenix Program," allowed the DOAS to consolidate a decades-old hodgepodge of mainframe applications into a single integrated platform accessing one common database via TCP/IP. The old SNA-based systems used redundant data and had

overlapping operations and reporting, burdening the network with excess traffic, said Phoenix workers.

But the new system had its price. Besides adding temporary employees to help oversee the project, the DOAS had to conduct extensive training of its existing staff.

Despite the costs, there are considerable benefits, said Charles Petty, accounting director at the DOAS. Queries for financial data that used to take a month are now completed instantly. Annual contract reviews that once could have taken weeks are now done in hours. "It's reduced the preparation for the audit time by at least 50%," he said.

A state-government ERP implementation is often more complex than a private-sector one, said Dennis Parkinson, a director at Hunter.

Among other things, there's often a Gordian knot of regulations, boards, commissions and agencies that must be disentangled to complete the project. "There tend to be lots of turf wars," said Parkinson. ▀

Compaq Ratchets Up OpenVMS With V7.3

Release calms fears that former Digital platform is dead

BY JAIKUMAR VIJAYAN

Compaq Computer Corp.'s newly released OpenVMS Version 7.3 builds on the company's promise to enhance the 24-year-old operating system it acquired from Digital Equipment Corp. two years ago, users and analysts said.

The release of the operating system also lays to rest any lingering speculation about Compaq's long-term commitment to the platform, analysts said.

The OpenVMS Version 7.3 operating system, announced last week, features improved disaster tolerance, clustering,

data backup and Web-serving capabilities, Compaq said.

The company also said last week that it will actively seek Defense Information Infrastructure Common Operating Environment (COE) certification for the operating system in a bid to reach new customers in the U.S. government marketplace. The COE is a set of standards and guidelines that technologies must adhere to before they can be sold into federal agencies.

Viva VMS

The move "puts to rest the 'VMS is dead' rumors and misconceptions" that have surrounded the operating system for the past few years, said Terry Shannon, editor of "Shannon Knows Compaq," a newsletter based in Ashland,

Mass. Since COE certification requires vendors to commit to supporting a platform for specific multiyear periods, "this is the closest that users are going to get to a contract signed in blood that VMS will be around for several years to come," Shannon said.

OpenVMS is a popular mid-to high-end operating system that Compaq acquired from Digital. It powers some of Compaq's highest-end servers, including the company's new 32-processor Wildfire Alpha server. Despite its continued presence in the high-end market, users say they are concerned about Compaq's long-term commitment to the platform because of its low volume and proprietary roots.

OpenVMS Version 7.3 has been enhanced in various ways

(see chart). "Some of these features — such as extended file caching — are long-awaited features" on OpenVMS, said Robert Young, a consultant at Newcastle, Del.-based AmeriStar Technologies Inc., which uses OpenVMS and is currently migrating to new, more powerful VMS servers. Similarly, the increased system availability possible now during backups is a "big win for folks with a heritage database," he said. ▀

AT A GLANCE

Wide Open

Enhancements in OpenVMS Version 7.3 include:

- Compaq Secure Web Server Version 1.0 for OpenVMS Alpha
- Compaq Java 2 Software Development Kit
- Compaq Advanced Server Version 7.3 for OpenVMS Alpha — a Windows 2000-compatible enterprise file and print server
- OpenVMS Enterprise Directory for eBusiness



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Airlines Compete in Wireless LAN Space

Access viewed as customer service edge

BY BOB BREWIN

THREE OF THE TOP U.S. airlines have taken their competition to the airwaves with a race to provide high-speed (11M bit/sec.) wireless LAN access to their customers in lounges and at gates within airport terminals.

Analysts said the airport airwaves war indicates the maturity and increasing popularity of wireless LAN cards, prompting strategic moves by the carriers to ensure that they don't forfeit a competitive customer service edge.

Dueling Plans

United Air Lines Inc. announced plans last week to roll out high-speed wireless LAN access at all domestic and selected international airports. American Airlines Inc., which first offered wireless LAN service in September 1998 in San Jose, gradually extended the service to 11 other airports. Last week, the company said it had extended wireless LAN access to 11 additional airports.

Delta Air Lines Inc. in Atlanta, meanwhile, has completed a deal announced in April with the Aerzone subsidiary of SoftNet Systems Inc. in San Francisco to provide wireless LAN access in its Crown Room lounges, with

service slated to start next year.

United, in Chicago, signed a letter of intent with Aerzone to provide high-speed wireless LAN Internet access in all of its domestic terminals and at a yet-to-be-determined number of international locations.

United said it plans to offer the service first at its hubs in Chicago, Denver, Los Angeles, San Francisco and Dulles International Airport in the Washington area. The timing is unclear, however. A United spokesperson said the service will be available in selected airports "sometime next year."

American Airlines last week rolled out the service to gates and Admiral Club airport lounges, with MobileStar Net-

work Corp. in Richardson, Texas, providing the service. Airports include New York's JFK, Newark, San Francisco, Chicago O'Hare and Baltimore/Washington.

All three carriers and their wireless LAN partners provide high-speed Internet access using the industry standard 802.11B protocol that's embraced by a growing list of notebook and laptop computer manufacturers, including Dell Computer Corp., Compaq Computer Corp. and IBM. Those vendors offer computers equipped with wireless LAN access cards priced less than \$200, with Dell and IBM also offering built-in antennae and 802.11B modems.

Elliott Hamilton, an analyst at Strategis Group Inc. in Washington, said the airlines' push

to provide wireless LAN access indicates that "it's definitely proven technology, and I believe we're going to see the market increase dramatically as prices [for access cards] come down."

C. Brian Grimm, a spokesman for the Wireless Ethernet Compatibility Alliance, an industry group, said the airlines'

efforts to offer wireless LAN service in airports shows that "enough people have used the technology that they want it when they travel, and they don't want to be hamstrung" by slower connections. Currently, travelers typically must be content with dial-up connections that provide only 56K bit/sec. access to the Internet. ▀

The Airport Airwaves War

Three airlines will provide the following wireless LAN services:

► American Airlines

Currently offers wireless LAN access at 34 Admirals Clubs and gates; the carrier serves 162 airports, and its commuter subsidiary, American Eagle, serves 140. Service started at San Jose International Airport in September 1998. MobileStar Network is American's wireless LAN service provider.

► Delta Air Lines

Plans to provide wireless LAN service to all 40 of its Crown Room airport lounges globally. It will also cover gates at an unspecified number of the 364 airports it serves worldwide. The first airports to be served will be hubs in Atlanta, Cincinnati and Salt Lake City next year. The Aerzone subsidiary of SoftNet Systems is Delta's wireless LAN provider.

► United Air Lines

Plans to provide wireless LAN access at all of its terminals, gates and airport clubs and lounges in the U.S. and at selected airports worldwide. United serves 130 destinations. Service will start next year in Chicago, Denver, Los Angeles, San Francisco and Dulles, Va. SoftNet Systems is United's wireless LAN partner.

Worldspan Migrates Transactions to Web

Bypasses legacy systems in move to open architecture

BY MICHAEL MEEHAN

Worldspan LP has taken a major step in transforming itself from an Old Economy computer reservations system (CRS) firm into a New Economy Internet distributor.

The Atlanta travel giant re-

cently unveiled a Web offering for travel agencies that will bypass the proprietary connections that have been a hallmark in the CRS market. Worldspan announced an agreement with Dublin-based Datalex Ltd. under which Worldspan took an undisclosed equity stake in Datalex and agreed to use its XML-based booking engine and data mining software for future Internet plays.

Worldspan also struck a deal

with ITA Software Inc. in Cambridge, Mass., which has developed a search engine that rivals established reservations systems, to create high-bandwidth connections that will enable a wider variety of companies to use the ITA product.

Providers 'Coming Around'

Philip Wolf, president of PhoCusWright Inc., an online travel research firm in Sherman, Conn., said Worldspan's moves displays a trend by the four entrenched reservations providers. "Everyone says they're afraid of the Internet, but they're coming around," he said.

Wolf added that Worldspan, Sabre Inc., Galileo International Inc. and Amadeus Global Travel Distribution LLC are showing signs that they would rather have agencies, corporations and individual travelers bypass their legacy systems than bypass their businesses altogether.

"They're all doing what they have to do to redefine what a travel distribution company looks like," Wolf said.

Jeremy Wertheimer, president of ITA, said the competitive landscape is changing in the travel industry, and his company is happy to partner with its rivals when the deal is in the best interest of all parties. "We're trying to add value to our customers, and if we get that value through Worldspan or Amadeus, that's fine with us," he said.

PhoCusWright released a report two weeks ago proclaiming Sabre the leader in CRS conversion to the Internet, estimating that almost half of all Web travel bookings are processed by the Fort Worth, Texas-based company. Wolf's company is predicting that Sabre, realizing how lucrative the Internet has become, will try to re-acquire the 30% stake in online travel agency Travelocity.com LP that it sold off in March to regain full ownership of that company.

The latest activity by Worldspan follows through on a promise that Sue Powers, its senior vice president for worldwide e-commerce, made at a conference in Orlando two weeks ago.

"The Internet will not happen without us," Powers said. "We will be there." ▀

Nordstrom Names New CIO

BY CAROL SLIWA

Nordstrom Inc. has plucked an internal candidate for the CIO position vacated last month when the Seattle-based retailer made sweeping top-level management changes in response to slumping sales growth.

The new CIO, Mike Richardson, 44, joined Nordstrom eight years ago as an information technology software development manager, gaining experience in several areas, in-

cluding sales audit, payroll, human resources, employee benefits and merchandising.

Two years ago, Richardson was named IT development manager for the Nordstrom Product Group, and last year he was promoted to division vice president of enterprise development and architecture.

Prior to joining Nordstrom, Richardson accumulated more than 12 years of IT experience in the manufacturing and

banking industries. He replaces Richard Lennon, Nordstrom's first CIO, who left last month after just seven months on the job.

Other departing executives included CEO and Chairman John Whitacre and 19-year veteran Marty Wikstrom, who headed the full-line store group. Nordstrom family members assumed those roles. Bruce Nordstrom, 66, came out of retirement to fill the chairman's spot; Blake Nordstrom, 39, was named president; and Pete Nordstrom, 38, heads the full-line store group. ▀

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BRIEFS

Toyota Integrates CRM Software

Toyota Motor Sales USA Inc. will soon be using new customer relationship management (CRM) software to guide, measure and individualize its communications with the buyers of new Toyota cars and trucks. The company announced last week that it's buying E.piphany E.5 software and services from an alliance of E.piphany Inc. in San Mateo, Calif., and Harte-Hanks Inc. in San Antonio.

Mitsubishi to Start B2B Exchange

Tokyo-based Mitsubishi Corp. said it will launch a business-to-business exchange focusing on Japanese gas, chemical and other utility companies. Mitsubishi has selected Commerce One Inc. in Pleasanton, Calif., to develop the technology infrastructure for the exchange.

SBC and BellSouth Rename Joint Venture

Cingular Wireless is the new name for the joint venture of the two wireless divisions of San Antonio-based SBC Communications Inc. and Atlanta-based BellSouth Corp. Cingular serves 19 million customers in 38 states and provides service in 42 of the top 50 markets, according to Cingular and analysts. The company said it expects to earn \$12 billion in annual revenue.

Short Takes

COMPAQ COMPUTER CORP. has named Shane Robison senior vice president and chief technology officer. Prior to joining Compaq, Robison was president of Internet technology and development at **AT&T LABS.** . . . **THE CHICAGO BOARD OF ELECTION COMMISSIONERS** has requested that federal and state attorneys shut down **VOTE-AUCTION.COM**, a Web site that offers votes to the highest bidder in this year's presidential election. The site is an Internet marketplace for the wholesale purchase of votes. It recruits voters, auctions their votes off in state groups and ensures that absentee ballots are accurate.

Feds Propose New Encryption Standard

Belgian algorithm wins long competition; would be used by public, private sectors

BY ANN HARRISON

AFTER A three-year worldwide competition, the U.S. Department of Commerce last week announced that an encryption algorithm from Belgium has been proposed as the new Advanced Encryption Standard (AES) for the U.S.

The competition, which involved some of the world's leading cryptographers from 12 countries, was organized by the National Institute of Standards and Technology (NIST), an agency of the Commerce Department's Technology Administration. After a 90-day period for public comment, NIST will revise the proposed standard, if necessary, and submit it to the commerce secretary for adoption. The process is expected to be completed by spring.

While the proposed algorithm — called Rijndael — is intended to protect sensitive information in federal computer systems, it's expected to be adopted widely by the private sector, especially in the financial services industry.

Gen Rao, vice president of the eSpace Security Center at The Chase Manhattan Bank in New York, said the bank "is poised to implement, over time, through a network of the bank's new security product vendors, the NIST's new AES, which will bring about increased security, performance and flexibility."

Mark Bouchard, an analyst at Meta Group Inc. in Stamford, Conn., noted in the company's online newsletter that he expects the Rijndael algorithm to ultimately displace the Data Encryption Standard (DES) for both government and business applications. But he advised against adopting prestandard versions of the AES because they could pose potential interoperability problems. According to Bouchard, a

fast switch to the new algorithm isn't warranted, "given continued suitability/strength of Triple DES."

Algorithms are mathematical formulas that form the central component of computer encryption systems used to secure e-mail, e-commerce transactions and other sensitive data. The AES will replace DES, which NIST adopted in 1977 to protect sensitive, unclassified information. A more secure variant of DES, called Triple DES, is now widely used in the private sector.

Rijndael was developed by Belgian cryptographers Joan Daemen at Proton World International and Vincent Rijmen at Katholieke Universiteit Leuven (Catholic University of Leuven).

Each candidate algorithm was required to support key sizes of 128, 192 and 256 bits. They were evaluated for the strength of their security, as well as for their speed and versatility across a variety of computer platforms.

According to NIST, Rijndael was selected because it had the best combination of security, efficiency, implementability and flexibility. A technical analysis of the AES candidates is posted on NIST's Web site.

"Rijndael showed exceptional performance on most platforms and has low memory requirements," said NIST director Raymond G. Kammer. He said development kits for the AES were expected to be available last week.

Kammer said analysis found that none of the algorithms under consideration had intellectual-property conflicts. Developers submitting algorithms for review were required to provide the algorithms free of royalty payments. Developers of the algorithms receive no remuneration for their work.

During the selection process, some evaluators suggested that two algorithms be selected as the AES. Kammer said that idea was rejected as impractical. He cautioned that encryption algorithms have limited life spans. "If Moore's Law continues and quantum computing does not manifest itself, this should have about a 30-year run," he said. ▀

Study: Internet Requires Better Architecture to Grow

Says Internet needs to be more reliable

BY JAMES COPE

The Internet is in need of an architecture that handles more addresses, increased reliability and quality of service (QoS) standards that Internet service providers can agree on, according to a report about to be released by the National Academy of Sciences in Washington.

"The Internet's Coming of Age" will be published by the Academy Research Council by the end of the year, said study director Jon Eisenberg. The report was commissioned by the federal government's National Science Foundation and conducted by a special committee of industry and academic information technology experts, Eisenberg said.

One area that captured the committee's interest, according to Eisenberg, was the need for the Internet industry to embrace and implement Version 6 of standard IP (IPv6). Although the Internet Engi-

neering Task Force has approved IPv6, the protocol set has yet to be implemented.

Eisenberg said IPv6 removes the limitations of Version 4, which can support only 4.3 billion unique addresses.

No one is sure when the number of connected machines will exceed the current protocol's capabilities, he said. But the study committee members said infrastructure equipment makers and service providers should implement the later version of the protocol.

IPv6 permits a virtually unlimited number of addresses. A low-end estimate, according to one official, is nearly 1,600 addresses for each square meter of the surface of the earth.

There was strong consensus among committee members for making the Internet more reliable and secure.

"A number of technologies have been developed to ... detect and prevent intrusion, and authenticate transactions," the study states. But implementation has lagged the availability of technologies.

The study suggests that it's

E-Adolescence

Report: "The Internet's Coming of Age"

Publisher: Research Council, National Academy of Sciences

Availability: In print by year's end; on the Web now

Issues addressed:

- ▶ More domain names on small number of servers
- ▶ Number of addresses limited by current version of Internet protocols
- ▶ Implementation of security and reliability technologies lags availability
- ▶ End-to-end quality of service requires cooperation

time for IT managers to implement technologies that are available today.

The report describes QoS over the Internet as a "weak-link phenomenon." End-to-end QoS requires service providers to agree on standards for "signaling, semantics of traffic classification and what priorities should be assigned to different categories of Internet traffic," the report states.

The printed version of the report will cost \$25, Eisenberg said. The online version can be found at <http://books.nap.edu/catalog/9823.html>. ▀



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Study: Oracle Users Not Interested in ASPs

Security concerns, current investments among reasons they eschew rental model

BY MARC L. SONGINI

PLANS TO use application service providers (ASP) to implement electronic-business applications are "virtually nonexistent" among Oracle Corp.'s enterprise network users, according to a survey. The company claims, however, that its ASP initiatives have attracted the interest of thousands of users.

The survey, conducted by Boston-based consultancy Aberdeen Group Inc., was commissioned by the Oracle Applications Users Group (OAUG) at its North American Spring Conference in Philadelphia in April. Of OAUG's 2,200 member companies, 1,024 participated in the survey.

For starters, these large users don't know enough about just how ASPs work to

sign on with them, according to a statement jointly issued by the OAUG and Aberdeen.

Respondents also indicated that they're worried about not being able to directly control the applications, and they don't want to sacrifice the investment they have already made in their in-house Oracle software.

Oracle rents its applications directly through its Business OnLine hosting service and through ASP partners. An Oracle spokesperson said Business OnLine already has about 100 business customers of all sizes.

It also continues to sign up ASPs, such as Sunnyvale, Calif.-based Amdahl Corp., which will offer a variety of Oracle wares, including its enterprise resource planning and customer relationship management applications.

Limited Appeal

Nevertheless, OAUG members are typically large enterprises that have concerns about security and don't want to open up their enterprises to outsiders, said Mark Linton, an OAUG board member. While there is some appeal to using

ASPs, it wouldn't be for transactional or other key types of applications, said Linton.

But the OAUG members aren't just singling out Oracle, said Don Payne, the organization's executive vice president.

"At OAUG, the companies are still trying to determine what their core competencies are and what outsourcing brings to the table," Payne said. "In general, IT professionals are expressing frustration at the services they already receive from vendors and suppliers and are not anxious to add another dimension to an already complex environment."

On the other hand, while OAUG members say they don't think ASPs are a "viable strategy" to reduce costs, they do think ASPs can cut down on staffing burdens, according to the report. ▀

Continued from page 1

Oracle

of the 1999 global database market was 42.2%.

Oracle8i's pricing is based on a measure it calls the universal power unit (UPU; see chart). Company officials have defended the measure, calling it a way for the company to simplify pricing [Page One, Sept. 18]. However, Ellison said, Oracle still has a wide range of pricing options. Customers can pay based on how fast a machine is, or they can choose an enterprise price, he said.

"We think choice is a good thing," said Ellison. "We have more choice for pricing than anybody else."

Although Ellison maintained that the vast majority of Oracle customers are happy with the pricing, some members of the Chicago-based International Oracle Users Group (IOUG) said they don't see it that way.

Mixed Reaction

"That's not what I'm hearing," said IOUG President Richard Niemiec. "I think there are variations. The reaction is mixed based on how close the [companies] are to Oracle. A lot of people have not investigated what a UPU is."

Samuel Asher, president of Sam Asher Computing Services Inc., a custom software

Fuzzy Math?

How Oracle calculates its Universal Power Unit (UPU) pricing:

The **UPU** is calculated by multiplying the number of processors by the processor speed. That number is then **multiplied by the price per UPU**, which is currently \$100. For an eight-processor, 700-MHz Intel-based machine, that comes to \$560,000.

development company in Rochester, N.Y., recently vowed to move his database infrastructure from Oracle to IBM's DB2 out of frustration with Oracle's pricing. "I am certain that I am not alone in my desire to eschew another information systems monopoly," said Asher.

Don Feinberg, chief technology officer at IPnetwork.com, an online intellectual property management firm in New York, said that although Ellison is correct that other vendors use capacity-based pricing, the comparison isn't fair. "The fact that capacity-based pricing is widely used is hardly proof that the market likes such a thing," said Feinberg. "If people are over a barrel, they will pay."

Michael Karaman, vice president and chief technology officer for product development

at The MedStat Group Inc. in Ann Arbor, Mich., said Ellison's contention that users like the new pricing is proof that he's out of touch with the market. "The only reason that there has not been a wholesale revolt is that Oracle is a predominant corporate standard," he said.

For MedStat, "the switch from concurrent user pricing to power-based pricing increases costs for new machines by one to two orders of magnitude," said Karaman.

"I have explained the licensing issues to my clients, and they have difficulty believing that their total charges for e-services will be so high," said John Chadwick, a United Kingdom-based consultant and an IOUG member.

Chadwick, who is putting together a public information database, said the UPU model would boost his database licensing costs to \$40,500 for standard Oracle, \$270,000 for the Enterprise edition and \$81,000 for Oracle Internet Application Server software. "We are very seriously looking at using DB2 and Sybase as alternatives," he said.

Tony Jedlinski, president of the Chicago Oracle Users Group, said that although many users will appreciate a more simple pricing scheme, some may feel they are being taken advantage of. "Some customers may be faced with unanticipated and unbudgeted price increases for support and updates," said Jedlinski. "Had these factors been known from

the start, these customers may have chosen a competitor's product or designed their systems differently," he said.

Jim Hill, systems manager for databases at HealthSouth Corp. in Birmingham, Ala., said he "hated" to see Oracle eliminate concurrent user licenses. The old pricing scheme gave his company more flexibility, he said.

Paul Dorsey, president of Dulcian Inc., a consulting firm for Oracle products in Iselin, N.J., said Oracle is going to charge customers as much as customers will allow the vendor to get away with. "There is enough leeway in the pricing structure that if you are willing to argue a little, you can get Oracle to give you a fair price for their software," he said. ▀

Ellison Urges Single Configuration for Oracle9i App Server

SAN FRANCISCO

Oracle Corp. is working with various hardware manufacturers to come up with a certified configuration for its new application server software, and the database vendor is urging customers to adopt it to solve the age-old problems of reliability and interoperability.

"Too many permutations... is the whole problem with the computing industry," said CEO Larry Ellison last week at the Oracle OpenWorld conference. "We think that is a fundamental flaw in the way software is

sold. If the airline industry built airplanes the way the software industry sells software, he told the crowd of more than 5,000, most of the attendees would have driven cars to OpenWorld.

"We don't even want you to install the software," said Ellison. In fact, if Ellison gets his way, Oracle9i will come preconfigured, preinstalled and pretested, so that the majority of nonexpert users don't have to fuss with the software at all.

"This allows us to sell you much

more reliable systems," he said. "It's not the way we do things today. Everybody tries to figure it out themselves. It's insane."

The Oracle9i Application Server boasts a patent-pending Web cache technology that the company claims speeds Web page performance threefold.

"We'll take any [Microsoft or IBM-based] site and... if the performance doesn't triple, we'll give you a million bucks," said Ellison. "Threefold, we can guarantee."

- Dan Verton

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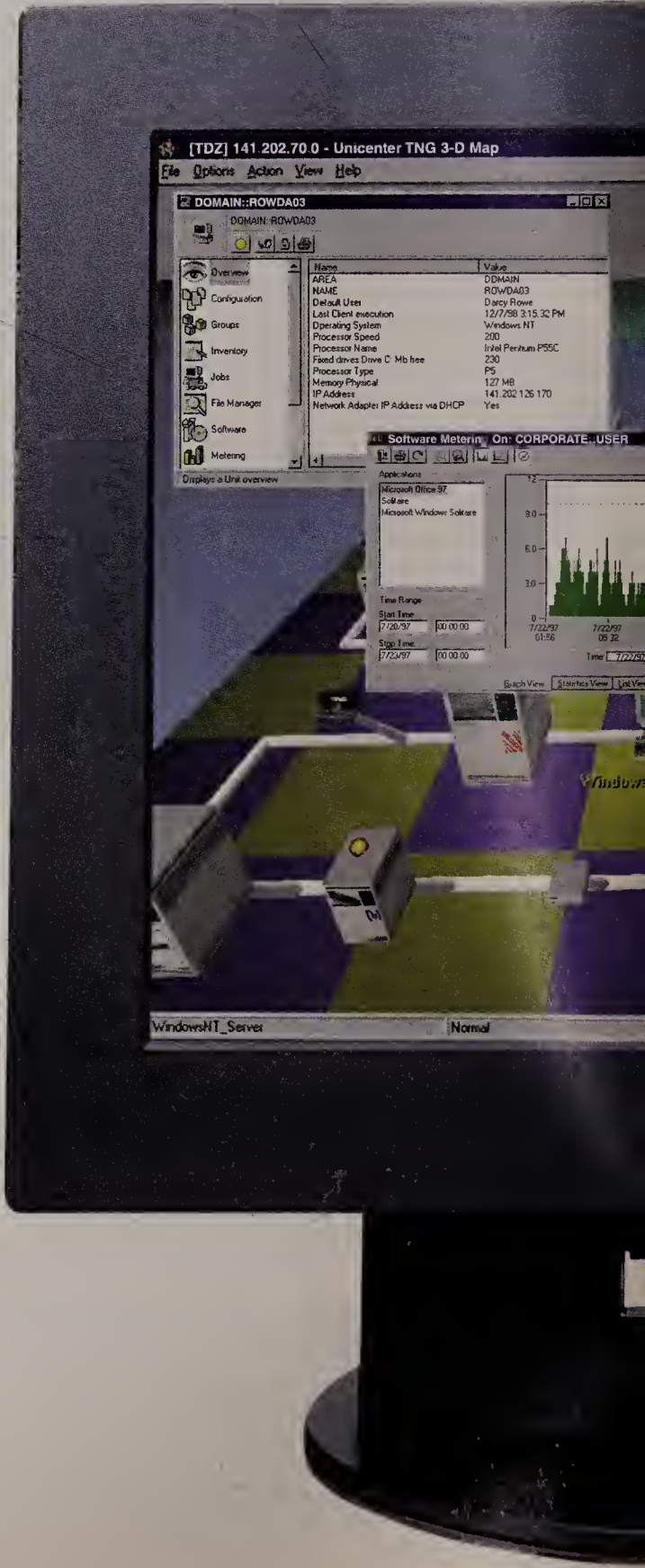
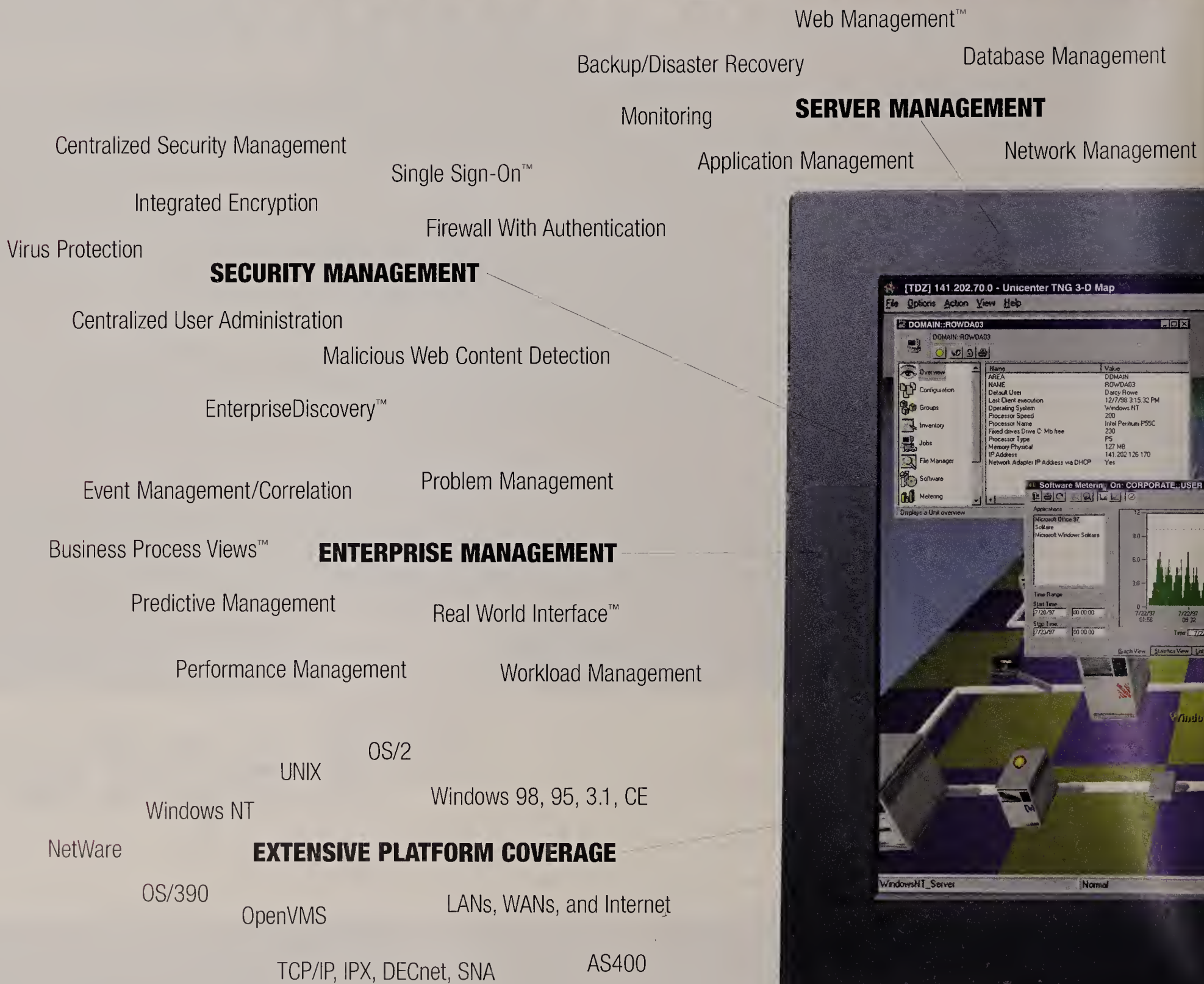
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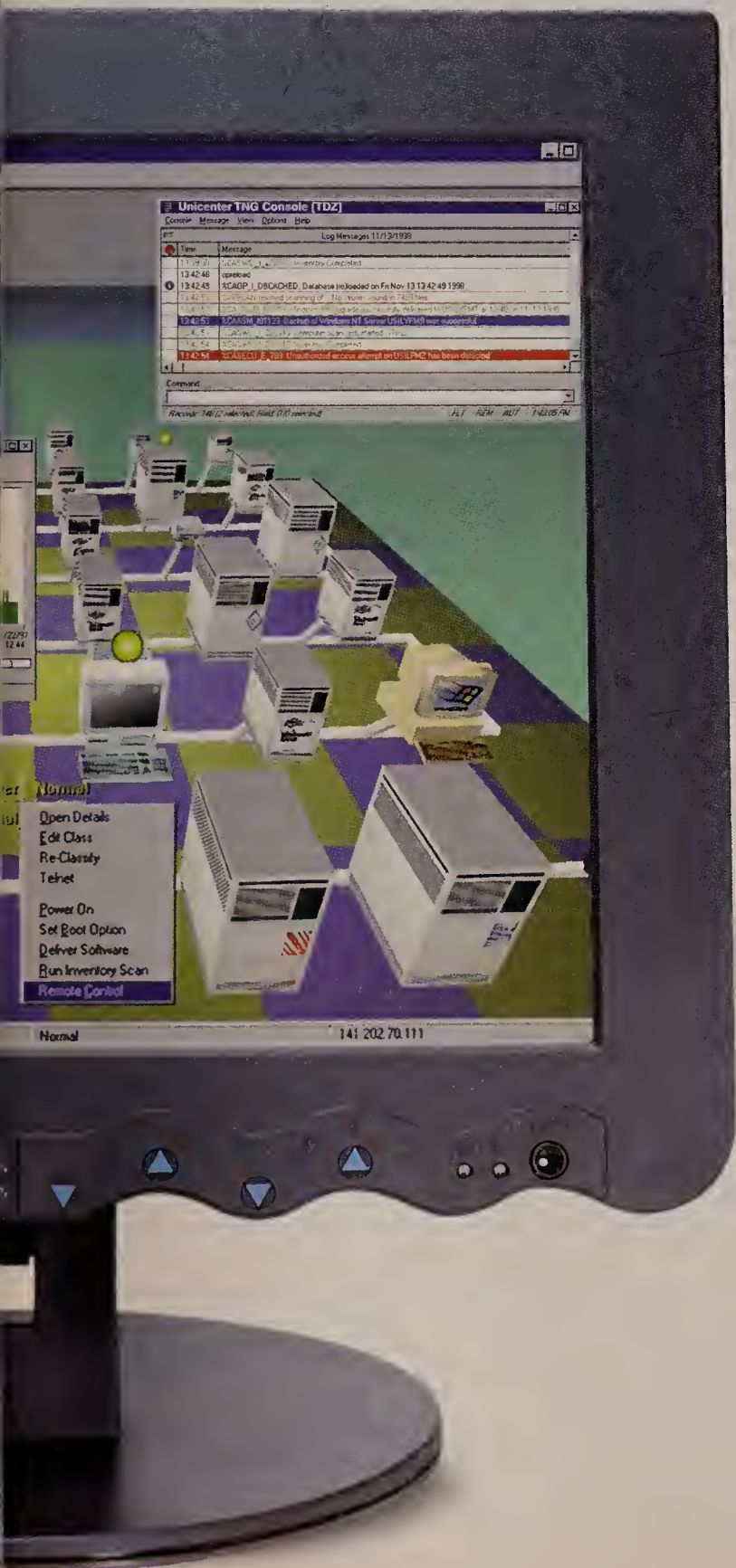
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Walmart.com Shuts Down at Top of Holiday Retail Season

Analyst calls 14-day closing for renovations 'insane'

BY TODD R. WEISS

ANALYSTS last week questioned Wal-Mart.com's decision to close down for renovations just as the busy holiday shopping season starts.

"Shutting your site down in the 95 days before Christmas — you're out of your mind," said Gene Alvarez, a retail analyst at Meta Group Inc. in Pleasanton, Calif. "Two-thirds of the business for retail occurs during that 95-day period."

But Walmart.com last week posted a letter from its CEO, Jeanne Jackson, saying the move was expressly to improve holiday shopping.

"This temporary measure will enable us to provide you with an improved store designed to meet your needs for an easier, more pleasant shop-

ping experience this holiday season," Jackson wrote.

The site is moving to a newly acquired e-commerce platform and will incorporate customer-suggested changes before its scheduled reopening Oct. 17.

Better E-Commerce Offering

Cynthia Lynn, a spokeswoman for Menlo Park, Calif.-based Walmart.com, said the company bought a customized e-commerce platform in July from defunct Web retailer HomeWarehouse.com and is now moving all of Walmart.com's products and data into the new system.

"The platform will allow us to provide a faster, easier-to-use e-commerce offering to our customers," she said. "We have a huge assortment, a mass quantity of data" to transfer.

The site is being shut down

to ensure that the transition is successful, Lynn said.

Among other things, customers suggested changing product categories, adding products and making it easier to log in to shop and place orders, said a company spokeswoman.

Alvarez, however, called the total shutdown "insane."

"If I made an acquisition and I wanted to change technologies, I mean, that's what testing and development environments are for," he said. "Why would I want to stop a revenue stream ... — if there is a revenue stream — in order to bring on site improvements?"

Earlier this year, Walmart.com was spun off as a separate venture from parent company Wal-Mart Stores Inc. in Bentonville, Ark. The online company is a joint venture of Wal-

Walmart.com On the Web

Past site changes have been rocky.

July 1996 Walmart.com goes live, offering a wide range of items for home delivery.

October 1999 Planned debut of redesigned Web site is delayed while kinks are resolved.

January 2000 Walmart.com's redesign finally appears, three months late.

October 2000 The site is closed until a scheduled Oct. 17 relaunch to install a new e-commerce platform and incorporate changes suggested by customers.

Mart, which is the world's largest retailer, and Accel Partners in Palo Alto, Calif.

Barrett Ladd, an analyst at Lincoln, Mass.-based Gomez

Advisors Inc., said that while the move may garner publicity for the company, she, too, didn't understand why the site had to close down. But, she added, "Wal-Mart has its own way of doing everything, and I think this is just another step down that path."

Scott Silverman, vice president of Internet retailing at the National Retail Federation in Washington, said Walmart.com must have good reasons for its decision.

"If this was Amazon.com and they shut down their online store, which is their only source of revenue, that would be a much bigger story," he said. But online sales are a "minuscule" part of Wal-Mart's bottom line, he said.

Carol Baroudi, an analyst at Hurwitz Group Inc. in Framingham, Mass., agreed.

"They can take the [sales] hit now far better than they can if there is any risk of [the site going] down over Christmas," she said. "There are probably many sites that should do the same thing."

Walmart.com was launched in July 1996. A Web site redesign scheduled for last October was delayed until this past January, the company said. ▀

Retail Exchanges Forge Ahead Amid Doubts

Skeptics cite other issues besides price

BY CAROL SLIWA
SAN DIEGO

The retail industry's two most prominent electronic marketplaces are readying plans to go beyond the auction stage to the sort of hard-core business-to-business transactions they hope will lead to significant cost reductions in their supply chains.

But the enthusiasm of early movers in the WorldWide Retail Exchange and GlobalNetXchange, along with various multibillion-dollar estimates of the money that will flow through marketplaces, has yet to entice all the players.

During a panel discussion at the National Retail Federation's recent NRF.com conference here, John Corrigan, CIO at New York-based The Estee

Lauder Cos., said his company passed on an opportunity to join an exchange and is taking a "prudent" approach.

"We feel price isn't the only issue in an exchange," Corrigan said. He said the critical issue is price/performance — "getting the product at the best price that allows the relationship between us and the suppliers to be solid." Corrigan also cited the importance of "accurate on-time delivery to meet a forecast, to meet a schedule, to allow us to take the raw materials and the components and assemble it."

Corrigan's position underscores the fact that many companies involved in the retail industry aren't rushing to join their competitors, even though a report from Forrester Research Inc. in Cambridge, Mass., indicated that more than 1,000 B2B exchanges have sprung into existence during the past 12 months.

"While the biggest retailers are engaged in creating exchanges, much of the rest of the industry is sitting and waiting to see how it shakes out," said Cathy Hotka, vice president of information technology at the NRF, commenting on the behavior in her industry,



SEARS CIO Jerry Miller: GlobalNetXChange goes live this month

which traditionally has been slow to adopt new technology.

"There's still a big gap between the reality and the vision," acknowledged Herb Kleinberger, a consultant at PricewaterhouseCoopers in

New York. Kleinberger said many suppliers remain skeptical of the benefits for them and wonder whether the exchanges are "just another way for the retailers to take out a hammer and beat the living daylights" out of them.

But he added that the retail industry is "ripe for some improvement" in its "very inefficient" supply chain. Ultimately, he said, B2B exchanges will provide value for all participants, particularly in keeping merchandise in stock, promoting more reliable forecasts and reducing supply-chain costs.

Advantages Over EDI

Jerry Miller, CIO at Sears, Roebuck and Co. in Hoffman Estates, Ill., said GlobalNetXchange, which his company is backing, will go live with its hub this month, running supply-chain transactions.

Some of those will be via electronic data interchange (EDI), and others increasingly will be based on the more flexible XML for tagging the data. Sears hopes to see \$5 billion to

\$7 billion in transactions running through the exchange by year's end, and the exchange expects to process as much as \$20 billion by year's end, Miller said.

Miller said the skepticism about exchanges reminds him of the early days of EDI, which had early adopters as well as naysayers. "But I do think that we're going to see adoption of [XML-based] technology a lot faster than we saw with EDI because it's so much easier," he said. "It's so much simpler. It's so much less expensive." Miller added that several suppliers in his exchange are "champing at the bit" to get online.

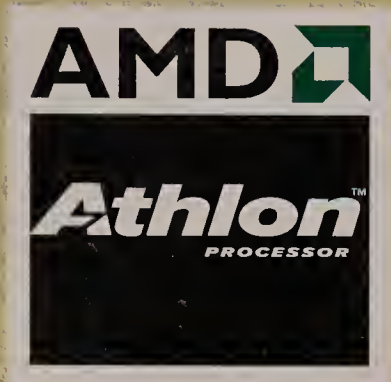
In a recent interview, Gerald Storch, president of financial services and new businesses at Target Corp. in Minneapolis, said he expects the WorldWide Retail Exchange's digital supply chain to be fully operational early next year. He said the exchange, which also includes Best Buy Co., J.C. Penney Co., Kmart Corp. and Safeway Inc., expects to handle \$600 billion in sales annually. ▀



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Privacy Group Critical of Release of Carnivore Data

EPIC says evaluating first set of papers is difficult because of lack of information

BY ANN HARRISON

THE ELECTRONIC Privacy Information Center (EPIC) in Washington charged that the FBI's first release of documents on its Carnivore Internet surveillance system last week doesn't include enough information to evaluate the technology for possible privacy violations.

EPIC acquired the 565 pages of data in a Freedom of Information Act (FOIA) suit it filed against the FBI in July. When EPIC complained that the FBI was slow to respond to the request, the agency was ordered by U.S. District Court Judge James Robertson at an August hearing to quantify the documents and develop a release schedule.

The FBI identified 3,000 pages of material relating to Carnivore. When the FBI refused to commit to a date for processing the information, Robertson ordered that Carnivore records be disclosed to EPIC every 45 days.

But according to a statement issued by the privacy group last week, the FBI's first release of documents withheld 200 pages. Another 400 pages were sanitized, with many bearing nothing but page numbers, EPIC said. The FBI also refused to provide the Carnivore source code, according to the statement.

Dispute Over Documents

EPIC's original FOIA request sought all records and documents on Carnivore, including the FBI's legal analysis of the system's impact on privacy and source code describing how data is gathered.

"We intend to pursue the litigation until the relevant documents are disclosed," Marc Kotenberg, EPIC's executive director, said in last week's statement. "We do not dispute

the need of law enforcement to protect public safety or pursue criminals in the online world. But the use of investigative methods that monitor Internet traffic and capture the private communications of innocent users raises enormously important privacy issues that must be subject to public review and public approval."

According to FBI spokesman Paul Bresson, the agency is processing EPIC's suit in compliance with the law.

"It is a little early to be voicing complaints about something that is ongoing," said Bresson, who defended the

For Consideration

Congress is also considering steps to limit Carnivore:

■ Last month, the House Judiciary Committee voted 20-1 to approve a bill by U.S. Rep. Charles Canady (R-Fla.) that would restrict the FBI's operation of Carnivore.

■ The bill would give e-mail the same protection awarded to voice conversations under federal wiretap laws.

■ A House vote hasn't been scheduled.

■ The bill could be attached to the spending bill that must be passed before Congress adjourns this year.

deletion of data from the documents. "Exemptions are made in interpretations of the laws that govern these types of documents."

Carnivore's History

The documents reveal that Carnivore was created in February 1997 under the name Omnivore and was originally proposed for a Sun Microsystems Inc. Solaris x86-based computer. In June last year, Omnivore was replaced by a system the FBI calls Carnivore, which runs on Microsoft Corp. Windows NT-based computers.

The data released by the FBI also includes a discussion of interception of voice over IP as well as reviews of tests for performance and recovery from attacks and crashes for both

Omnivore and Carnivore.

Carnivore was revealed in April when an attorney for Atlanta-based Internet service provider EarthLink Inc. told the House Judiciary Committee that the FBI was requiring the company to install the system on its network to fulfill court-ordered surveillance of criminal suspects. But EarthLink resisted the installation of the secretive system because it caused performance problems on its network. EarthLink, like EPIC, couldn't examine Carnivore to determine if its capturing of e-mail, IP addresses and other traffic violated the privacy of other customers.

In response to criticism from Congress and privacy advocates, the FBI announced late last month that the Chicago-based Illinois Institute of Technology Research Institute has been selected to review Carnivore for possible privacy violations. But the institute has been criticized for agreeing to a number of constraints on the research that other universities refused to accept. ▀

3Com's Next CEO Shares Vision for Future

On Jan. 1, **Bruce Clafin**, now president and chief operating officer of 3Com Corp. in Santa Clara, Calif., will become the company's president and CEO. Clafin will replace Eric Benhamou, who will continue serving in his post as chairman.

Last week, *Computerworld* senior writer James Cope asked Clafin how his management style and vision for 3Com differ from Benhamou's.

Q: What are the fundamental differences between the jobs of chief operating officer and CEO?

A: There are really two answers to that: very little and a lot. Eric has already structured my job so I have fairly broad responsibilities in the company, including all of our product development, manufacturing, marketing, sales, service support. All of the key staff [in these organizations] already report to me. The three groups that don't are the chief financial officer, the chief technology officer and business development. So, in some respects, I've been doing a large percent

of the job already.

Having said that, however, there's a big difference between being the boss and not being. There is an incredible sense of responsibility — recognizing that the ultimate decisions and ultimate performance of the company rest with me.

Q: How does your management style differ from Benhamou's?

A: Eric and I stylistically are very different people. We always arrive at the same point, but ... we come at it from a different perspective. I am probably more verbal, and I am probably more assertive. Eric is more cerebral and thoughtful. We complement each other very well.

Q: What changes do you have in mind for 3Com heading into next year?

A: We've already announced an enormous amount of change in the company over the past

year. ... But change is the nature of our business, and I would expect going forward you'd see us more assertive, aggressive in investments in technology and marketing.

Planet Project [a worldwide Internet poll to collect information on cultures and beliefs, which 3Com announced Oct. 4] is a good example. This is without question an audacious attempt at doing something that has never been done before and on a scale that is unparalleled. There is risk with it, and there is also great reward. It typifies the kind of com-

pany we want to be going forward.

Q: What's 3Com's market focus, and how might that change in the future under your leadership?

A: We focus on three markets today, two of which we've done historically: commercial markets and carrier service provider markets. The new mar-

ket for us is the consumer. As people get ... high-speed connections to the Net, they inevitably want to share it among multiple devices in the home, which creates a networking opportunity.

Q: What's the hottest market for 3Com?

A: It's clearly consumer. It is being driven by broadband. ... Second, there's wireless. We're the leading provider of [Code Division Multiple Access] wide-area wireless connections and local-area wireless networking. And there's IP telephony, too.

Voice [over IP] is without question an enormously disruptive technology. The whole voice world grew up in a regulated environment in which business models were established [and] monopolies were set up ... under the auspices and oversight of government. The data world came completely unregulated and deployed technology in whatever way made commercial sense. We now have the regulated and unregulated worlds coming together. Let's be clear about it. The data world won. It is turning the voice world on end. ▀



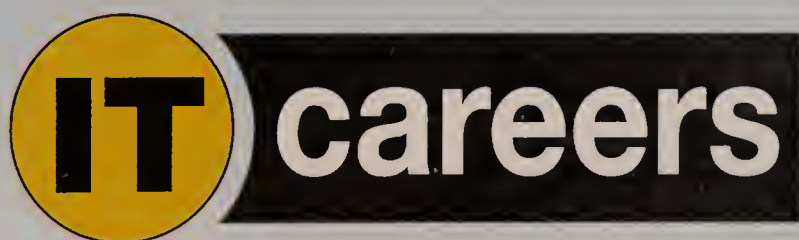
INCOMING 3COM CEO Bruce Clafin says he expects the company will be more assertive

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Huge Navy Outsourcing Contract Hits Last-Minute Snag

BY DAN VERTON

The U.S. Navy's plan to award a multibillion-dollar outsourcing contract has run aground

on Capitol Hill for the sixth time in as many months, after members of the so-called depot caucus expressed con-

cern about the megadeal's potential impact on federal jobs at various naval industrial installations.

Navy officials had planned to award the contract, known as the Navy/Marine Corps Intranet (N/MCI) project, by

Sept. 30 — the end of the federal government's fiscal year. The contract, which is expected to have a value of at least \$12 billion and could potentially be worth as much as \$16 billion, would transfer ownership of the Navy's entire information technology infrastructure to a single vendor.

However, last-minute questions were raised two weeks ago by several members of Congress whose districts are home to a large number of Navy supply depots and shipyards. They questioned the effect the contract could have on everything from jobs to control of federal dollars.

"We had hoped to award the N/MCI contract by the end of this fiscal year, but some of the questions from Congress had not been resolved," a Navy spokeswoman said, adding that the delay could shorten the test phase for the first portion of the project. The installation schedule "will be reduced by one day for each day of delay, which may possibly impact our operational testing phase, depending on the length of the delay," she said.

Haggling On

Word of the delay came as Congress continued to haggle behind closed doors in a conference committee session designed to iron out differences between the House and the Senate over the fiscal 2001 defense appropriations bill. A spokesman for the House Armed Services Committee declined to comment on the negotiations' proceedings.

However, the Navy spokeswoman denied reports that Congress is concerned about N/MCI's potential impact on the service's ability to carry out or fund future operations.

In the meantime, the Navy has issued 30-day "interim bridge contracts" for the Naval Air Systems Command in Patuxent River, Md., the first command scheduled to switch to N/MCI-based IT services.

Navy officials claim that N/MCI is necessary for the service to make use of new technologies and to help it fight more effectively in future battles.

The N/MCI contract was slated to be awarded at 5 p.m. last Friday, past the deadline for this article. Visit Computerworld.com for updated information. ▀

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BRIEFS

Cisco Revises Optical Networking Strategy

Cisco Systems Inc. last week unveiled a plant and a new strategy for manufacturing optical networking products. Citing an explosion in demand for Internet access, San Jose-based Cisco said that by manufacturing such products in-house - in its new 674,000-square-foot facility in Salem, N.H. - it will be able to reduce delivery times and stay ahead of market demand.

Legato Shuffles Execs

Mountain View, Calif.-based Legato Systems Inc. took the first steps last week to rebuild its credibility, naming David Wright as president and CEO and Andrew Brown as chief financial officer, analysts said. Wright, president and CEO of Sunnyvale, Calif.-based Amdahl Corp., replaces Lou Cole as president and CEO, but Cole will remain Legato's chairman of the board. Brown, former CFO at Milpitas, Calif.-based Adaptec Inc., replaces Stephen Wise, who resigned in July.

Short Takes

COMPUTER ASSOCIATES INTERNATIONAL INC. in Islandia, N.Y., reported strong preliminary second-quarter earnings that fell short of analysts' expectations. . . . **MAXTOR CORP.** in Milpitas, Calif., plans to buy **QUANTUM CORP.**'s Hard Disk Drive Group, also in Milpitas, for \$2.3 billion. . . . **DOUBLECLICK INC.** said it's acquiring **NETCREATIONS INC.** for \$191 million in stock. Both firms are located in New York. . . . **GEAC COMPUTER CORP.** in Toronto named William Nelson, its non-executive chairman, as interim CEO following the resignation of Douglas Bergeron. GEAC has initiated a search for a new CEO. . . . **EXCALIBUR TECHNOLOGIES CORP.** in Vienna, Va., and **DIGITAL ISLAND INC.** in San Francisco entered a partnership to offer streaming media services. Digital Island will integrate Excalibur's Screening Room technology into its Footprint content-delivery services. . . . Eighteen months after **ORACLE CORP.** CEO Larry Ellison pledged to transform the company into a truly Web-enabled business and reduce expenses by \$1 billion, Oracle last week revised the figure to \$2 billion.

BEA, IBM Square Off In App Server Market

Leader will be determined by technical ability and customer loyalty, say analysts

BY DAN VERTON

BE A SYSTEMS INC. last week announced new e-commerce and personalized Web content-management applications that could help extend the company's growing technical lead in what some analysts predict will be a close race with IBM for the top spot in the application server market.

The release of BEA's WebLogic Commerce Server 3.1 and WebLogic Personalization Server 3.1 comes on the heels of several high-profile user implementations for the San Jose, -based e-commerce transactions company.

Last month, BEA signed a major deal with Redwood City, Calif.-based DHL Worldwide Express. In August, the company inked an agreement with British Telecommunications

PLC in London, following a deal in July with Deutsche Bank AG in Frankfurt, one of the world's largest financial services companies. Other BEA customers include Amazon.com Inc., ETrade Group Inc., FedEx Corp., Kaiser Permanente Health Plan Inc. and United Air Lines Inc.

A recent study by Giga Information Group Inc. in Cambridge, Mass., placed BEA and IBM in a dead heat this year for leadership in the \$1.64 billion

application server market - both companies with a projected 24% market share.

According to Yesim Natis, a vice president and research director at Gartner Group Inc. in Stamford, Conn., BEA's strengths are a loyal customer base and attractive technology.

Customers Up for Grabs

"BEA still has a bigger installed base than IBM, but IBM is growing," said Natis, who added that BEA had been winning over IBM customers until IBM released an updated version of its WebSphere product last December.

"IBM has a presence, but

not a lot of new business," according to Natis. "BEA is more aggressive and will penetrate the new markets better than IBM."

For Ed Tobin, founder of Driveway Corp., a San Francisco-based online file-storage company and BEA site, the decision to go with BEA was a technical one. "We wanted to build on the [Java 2 Enterprise Edition (J2EE)] emerging standard, and it became clear that BEA was a leader in developing these technologies," he said. "Although we started off looking at alternatives, the decision was based [on] features and who was further along on the J2EE standard."

Mike Gilpin, another analyst at Giga and co-author of the firm's application server market forecast study for this year, said that for the past few years, BEA has been a technology leader in the market. ▀

Avaya Targets Net Providers

BY JAMES COPE

Avaya Inc., the networking spin-off of Lucent Technologies Inc. in Murray Hill, N.J., began trading on the New York Stock Exchange last week, setting the stage for an initiative to target the service provider market.

Avaya President and CEO Donald Peterson made the stock-trading announcement at the recent Network/Interop event in Atlanta. The news came as the Basking Ridge, N.J.-based company disclosed plans to roll out products aimed at the service provider market this month. The company will trade under the ticker symbol AV.

The products will be offered through a new Avaya business unit called Hosted Communications Solutions, to be headed by Avaya Vice President Elizabeth Converse Wilson.

Integrated Products

In an interview, Wilson said Avaya plans to offer four integrated communications products for hosts: one for hosting enterprise Internet Protocol telephony starting at \$205,000, another for hosting customer contact centers starting at \$270,000, a hosted virtual telephony bundle for connecting

remote workers starting at \$180,000 and a hosted video collaboration and conferencing system starting at \$5,000.

Peter Bernstein, an analyst and president of Infonautics Consulting Inc. in Ramsey, N.J., said Avaya's concept of selling bundled application systems to hosts could make CIOs more comfortable with outsourcing, because the systems are designed for the enterprise and have their roots in Lucent's voice heritage.

Among Avaya's customers is U.K.-based Hilton Group PLC. According to Sandy Riach, director of standards and technology at Hilton, the technology that Avaya inherited from Lucent and Bell Labs gives the new company some market advantage. And spinning off the enterprise technology through a separate company could better address the needs of corporate users, he said.

"I'm looking for more focus [on the needs of the enterprise] than I got from Lucent and hope to get more support in the development area," Riach said.

But that's from the perspec-

tive of an existing customer. For customers who have no history with Lucent, Riach said, "Avaya's success depends an awful lot on how they market themselves. Lucent didn't market at all."

William Hurley, an analyst at The Yankee Group in Boston, said he agrees. "Getting Avaya established as a brand is a requisite to competing with companies like Cisco," he said. "Certainly, they have an outstanding technology base [from Lucent] on which to capitalize."

But Terri Bracco, an analyst at Current Analysis Inc. in Sterling, Va., said she has reservations

about Avaya's ability to compete in the enterprise network market. "The product descriptions are somewhat vague, and their pedigrees are . . . unclear," she said.

In Atlanta, Peterson reiterated that what's now Avaya came into being after Lucent decided to free itself of its enterprise networking business in order to better focus on the telecommunications carrier market. Avaya serves customers in 90 countries, he said, and has \$8 billion in revenue. More than 20% of revenue comes from sales to international customers, Peterson said. ▀

Application Server Market Share Forecast

COMPANY	FORECAST 2000	1999
BEA	24%	32%
IBM	24	16
ATG	10	5
iPlanet	9	6
Allaire	8	6
Sybase	7	15
SilverStream	5	4
Oracle	3	5
Bluestone	3	3
Gemstone	2	3
Persistence	1	2
Inprise	1	2
Iona	1	0
ObjectSpace	1	1
Secant	0	1

Note: BEA's 32% last year was due to its early time-to-market advantage

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CEO PETERSON: Avaya will pursue the telecom market

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MARYFRAN JOHNSON

Watching wireless

LAST WEEK, I watched a hapless marketing executive struggle through a keynote speech that relied on a series of demonstrations of new wireless gadgets and technologies. While thousands of techies looked on hopefully, the poor guy proved my new theory that the scope of a demo failure

is directly proportional to the size of the audience. And it was one huge crowd.

Painful as it was to witness, this demo disaster served up a sobering reminder that much of the hype around wireless these days is still just that. All the vendor hoopla in the world won't mask the immaturity and downright fluke nature of many of these technologies. One of our editors attended a wireless conference last week and was startled when only a few dozen people showed up to talk about "mobile commerce." As much as we'd love to write about them, business case studies of successful wireless rollouts are still relatively rare.

If I had to pick a poster child for leading-edge use of wireless today, it would be United Parcel Service with its recent move to shipment tracking via almost any wireless device. Not a very jazzy application, really. But as a UPS official put it, "Wireless is in its infancy, and we're watching to see how fast it will catch on." Supposedly by 2002, every new mobile device sold will have Internet access. Also on the way are dozens of new services — stuff we never knew we always wanted — that will be



MARYFRAN JOHNSON is editor in chief of Computerworld. You can contact her at maryfran_johnson@computerworld.com.

piped directly into those gadgets. Already, there are about 400 million wireless devices loose in the world, when you count everything from handheld computers, PDAs and cell phones to two-way pagers.

So what's keeping businesses from embracing wireless? For starters, an array of contradictory standards and competing protocols makes it difficult for corporate developers to figure out where to start. Before it even reaches that device in your hand, wireless content has to run a gamut of technologies, includ-

ing a wireless application server, a particular markup language, a gateway server and a set of specific network protocols. Assuming that all that works (it often doesn't) and that bandwidth issues aren't a problem (they usually are), there are information security and privacy issues galore for corporate IT to worry about.

Yet despite all these obstacles, a world without wires is clearly coming our way. How to get ready? Keep the pressure on your vendors to agree on standards. Insist on straight answers to security and privacy concerns. And if you're really a glutton for punishment, you can always ask to see a demo. ▀

MORTON BAHR

Unions have a role in today's New Economy

UNIONS IN the New Economy? The idea isn't as far-fetched as some would believe. White-collar workers already comprise the single largest group of union members (46.2%), and unions now represent 22% of all employed professionals.

Who would have thought a year ago that doctors in the U.S. would see unionization as possibly being in the future for their profession? And not only did the 17,000 highly skilled Boeing engineers in Seattle affiliate with an AFL-CIO union, but they also won raises and union security earlier this year after a 48-day strike that shocked everyone.

A significant number of members of the Communications Workers of America (CWA) are already doing New Economy-type work such as installing and repairing DSL and data integration systems. But the recent strike against Verizon was portrayed by the news media as an Old Economy union vs. a New Economy company.

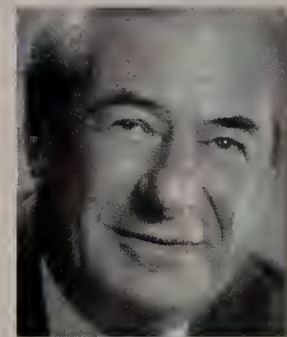
The strike was never about the usual pocket-book issues of wages and benefits, although we did win big raises.

The strike's key goals concerned the access of union members to new jobs in the company, the quality of work and the right to secure jobs with secure futures in both good and bad economic times. I can't remember a union ever striking over these issues.

But unions prefer partnership to conflict, and we're experimenting with a variety of new ways to transform ourselves for the New Economy.

In the heart of Silicon Valley, labor unions and communities have formed Working Partnerships USA, an organization that helps working families solve New Economy problems. For example, the Together@Work "temporary agency" helps temp workers earn better pay and benefits while offering training and strategic placement.

We see growing anxiety among IT workers as reflected in the messages we receive on the Washington Alliance of Technology Worker/CWA Web site. IT workers are concerned about affordable health insurance, skills improvement, their privacy rights, access to 401(k) and other



MORTON BAHR is president of the Communications Workers of America, a union for professional and technical workers.



retirement plans and whether they will be replaced by lower-paid foreign workers in the U.S. on H-1B visas.

A union could provide alternatives for them. The CWA, for example, is an education-driven union that negotiates employer-paid education and training for our members. We will soon open a training center in Seattle, our second in the country funded by training grants — which the CWA sought — that are provided under the H-1B visa law. The Seattle center will offer a new IT cabling apprenticeship, distance learning and software training for CWA members.

New Economy unions such as the CWA and the International Federation of Commercial, Clerical, Professional and Technical Employees want to shift workers from old technology to new and make sure our members remain employable in the face of rapid change. But Old or New Economy, employees in the growing technology sector need a voice on the job. Today's unions are positioning themselves to play that role. ▀

ALLAN E. ALTER

Yet another 'chief'? Don't roll your eyes

RECENTLY, *Computerworld's* Patrick Thibodeau, reporting from the Global Privacy Summit in Washington [News, Sept. 18], wrote that companies are creating a new "chief" role — that of chief privacy officer (CPO). CPOs are meant to be the executives on the front line of an issue that can affect the bottom line: establishing

trust with customers by creating and executing data-privacy policies.

I'm sure that talk of yet another chief officer title is raising many eyebrows, if not prompting eye-rolling, snickers and snorts. Do we really need yet another chief? Are these grand titles an effective way to respond to business pressures?

This isn't a new debate. It began when the CIO title was created and grew when chief network officers and chief knowledge officers appeared on the scene. This debate has now reached a new level of intensity, as companies appoint new chiefs such as chief awareness officer, chief competitive officer and chief visionary officer. The titles can look like a pop-management gimmick, if

not downright silly. One recent article ["Too Many Chiefs," *The Industry Standard*, Sept. 11] ridiculed the trend by publishing an organizational chart of the future in which everyone is a chief.

But the title can do more than boost some managers' sense of self-importance. It can be a good way to focus on a problem, such as privacy, that affects the whole company but doesn't fall into a neat spot on an organizational chart.

Consider Michael Mace, the chief competitive officer at Palm Inc. According to *The Wall Street Journal*, Palm's president created Mace's job to help the company fend off the challenge of Microsoft's Pocket PC. This battle between Palm and Microsoft is far from over, but so far, Mace appears to have been effective in his role. He has fought complacency within Palm's ranks, gathered critical intelligence on Microsoft's product strategy, conveyed this information in a way that prompted Palm's executives to take action and then worked with Palm's chief marketing officer and a special task force to develop and execute a response. Instead of being caught flat-footed, Palm was well-prepared to fight back when Microsoft released the Pocket PC.

The chief role worked here, not because Mace was in charge of an important function, but because he served as a focal point for information and a catalyst for early action. He wasn't single-handedly in charge of leading Palm's response to the Microsoft threat. But his post ensured that Palm had one person who always focused, with no distractions, on a critical issue. As chief competitive officer, he had a license to alert the company's top executives. And when it was time to combat Microsoft, Mace was there to supply competitive intelligence, contribute ideas and work with other managers to coordinate the response.

This kind of chief isn't the same as a CIO — Mace doesn't run a large department with a big budget. But like CIOs, these chiefs act as the corporate leadership's eyes and ears on a new and complex issue. Privacy is an issue that deserves that kind of attention. As long as the chief doesn't let his ego or jealousy run away with him to the point where he forgets that he's part of a larger executive team, a company can benefit from the focus, personal responsibility and sense of urgency that the establishment of such a role can create. ▀

READERS' LETTERS

Train Americans

I WAS SURPRISED to read in "Election Politics Stall H-1B Hike" [News, Sept. 11] that if the H-1B visa limit isn't raised to 200,000, more work will be moved offshore. In terms of the real issue, which is the training and development of a capable domestic workforce, it matters little whether the work is moved offshore for foreigners to do or the foreigners are brought here to do it. Besides, it is a lot easier to say that work will be sent offshore than it is to actually do it. Until Congress and the administration get it through their heads that business needs an incentive to train domestic workers, the so-called shortage of workers will remain.
Geoffrey K. Wascher
Utica, Mich.

English will spread

"GLOBAL WEB Sites Prove Challenging" [News, Aug. 21] was an excellent article. I couldn't agree more that in a

few years, there will be exponential growth in global Web commerce.

It is very important to have local input to global sites to avoid gaffes; it is even difficult within one country to cover all the possibilities, there is such diversity. This is one of the reasons English will remain predominant on the Web. It is relatively unambiguous and simple. It is also relatively free of strong dialects. Instead of reducing the predominance of English, the Web will expand the use of English throughout the world.

C. Gene McConnell
Dhahran, Saudi Arabia
mcconnce@earthlink.net

Firestone's problems go beyond technology

IN "INFORMATION Gap" [News Opinion, Sept. 18], Mark Hall implies that if Firestone had employed a properly integrated information system, its recall debacle may have been avoided. That conclusion seems a bit presumptuous.

The availability of information doesn't neces-

sarily lead to correct, or even prudent, decision-making. My IS department supplies management with all manner of information and could supply considerably more on request. But I couldn't say how much of the information I provide is absorbed or acted upon. Perhaps this tire problem was simply the result of careless decision-making. If that's the case, then integrated, even state-of-the-art, information software would not have saved Firestone.

I don't think lack of technology is at the heart of Firestone's problems. As I've followed the investigation, I've come to the conclusion that we're dealing with a people problem. And technology cannot address that.

Paul Chandler
Manager of IS
Intersport Fashions West Inc.
Tustin, Calif.

Breach of security

AS A RECRUITER of network security professionals, I was particularly drawn to the "Next Candidate,

Please" side story to your "Wanted; Security Superman" feature [Business, Sept. 25].

That headhunter should have worked with the client on the pros and cons of the job to help the client find a realistic match. A good recruiter will find candidates who are a match both technically and culturally for a company. As a security specialist, I understand full well how hard it is to find good candidates but would never use that as a reason to send subpar talent to a client.

Dan Trudeau
Staffing consultant
Professional Resource Associates
Marine City, Mich.
dtrudeau@prausa.com

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COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet letters@computerworld.com. Include an address and phone number for immediate verification.

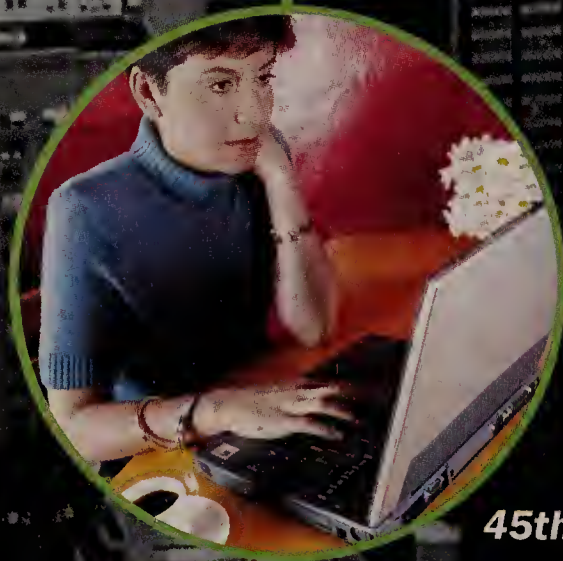


ALLAN E. ALTER is editor in chief of the *MIT Sloan Management Review* and a former *Computerworld* editor. Contact him at alter@mit.edu.

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DAVID FOOTE

Wanna keep your staff happy? Think 'career'

IT'S RIGHT THERE in the latest employee surveys: Workers want opportunities for growth and advancement. Sure, they'd like to make more money, but when they're up against the decision to stay with their current employers or fly the coop, career progression beats cold, hard cash hands down.

That's what we've heard for seven straight surveys in Foote Partners' quarterly polls of IT workers in more than 800 companies. And they desperately want to discuss their career goals with their bosses. This year's *Computerworld* job-satisfaction survey (April 24) indicated that 43% of IT workers are either "some-what" or "very" dissatisfied with the opportunities available to them.



DAVID FOOTE is managing partner and research director at Foote Partners LLC, an IT compensation and workforce research firm in New Canaan, Conn. Contact him at dfoote@footepartners.com.

Based on our observations, here's what the descent into workforce hell invariably looks like for you, the manager. You've manipulated your workers with short-term goodies (bags of money) and are perceived as insincere in your efforts to understand

them. They soon catch on and begin acting on their feelings — often quite unconsciously — in subtle and increasingly passive-aggressive ways. Feuds, vendettas and general carelessness lead to blown projects, defections and declining morale. Band-Aid solutions for replacing skills, re-energizing projects and reducing turnover lose their potency. And while mercenary consultants with just-in-time skills and broad experience can be valuable in tight spots, overreliance on them costs you big-time in turnover.

But even with so clear and consistent a message, most of you are still trying to weasel out of your responsibilities to give your intellectual assets more peace of mind. To make matters worse, worker reaction to the catchphrase "people are our most important resource" has turned from minor irritation to outright anger and resentment.

What are you gonna do about it?

First, accept that lack of commitment is the major reason for losing good people. You need to manage your employees' commitment in order to successfully motivate and retain them, not simply pander to their whims and capricious natures.

Next, connect everything possible to career development, giving your workers a clear one-to-five-year view of where their careers with you

can lead. Create formal programs for moving people ahead but not up some proverbial "ladder" that emphasizes budget control, years of service and number of direct reports under them. Base advancement instead on core skills and competencies that staffers must demonstrate and that have explicit links to business goals and objectives. Identify specific measures of success, craft a goal-directed future for each employee and then manage their commitment to those goals. Develop mutual expectations between managers and workers, and work diligently to achieve them. This is more art than science, so train your managers appropriately. Give them a feeling of belonging to an objective, a project or a team pursuit, and make the workplace a pleasant place to work.

Make certain that incentives and rewards are fair, plentiful, varied and tied to both individual and team success with a view to overall enterprise success. Assign coaches or mentors because — let's face it — managers of projects (to which workers are increasingly assigned as their basic work domain) usually don't have the time or skills to help employees manage their careers and professional growth.

This will get you started. In a future column, I'll go into more detail with best practices and tips pulled from our research. ▀

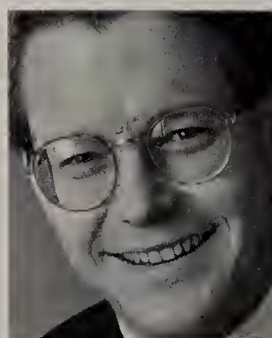
THORNTON MAY

Attention CIOs: Prepare to lead the way on culture

OVER THE PAST six weeks, I have traveled many miles, visited many CIO watering holes, sat in on several CIO campfires (such as the Society for Information Management conference in San Diego and the Strategies for Electronic Commerce program at Carnegie Mellon University) and listened to many voices.

In each interaction, as the libations began to take effect and the campfire embers burned down, the conversation inevitably turned to the next major career/skill/competence mountain CIOs will be asked to climb: the "culture-carrier, culture-champion, culture-maker" mountain.

"Say what?" you might react. But I'm absolutely serious. The canon being preached on the rubber-chicken circuit posits that while CIOs may have been hired for the depth and breadth of their



THORNTON MAY is corporate futurist and chief awareness officer at Guardent Inc. in Waltham, Mass. Contact him at thornton.may@guardent.com.

technical résumés, they're judged on their business ability. This is old news, similar to saying dinosaurs were big and slow. It was once true but no longer is of any actionable significance.

We're ever so closer to a day when culture will be the bait used to lure employees, seduce investors and drive stock prices. And it will become the responsibility of CIOs.

Many firms have strong cultures — Ericsson, Southwest Airlines and General Electric come immediately to mind. Some have very cool cultures — Joie de Vivre Hospitality in San Francisco and iSpheres Corp. being prime examples. There are Mediterranean and Nordic cultures. Silicon Valley is believed to have a culture all its own. And for every culture, there is a counterculture, such as hackers and practitioners of digital security.

We know culture exists and is important. Even Luddites will acknowledge that technology has an impact on culture. The more extreme among them complain that we live in a technopoly, a global monoculture in which all forms of life are subordinate to technology.

A first-order question on culture would be: Can cultures be created, nurtured and, when necessary, modified? Do we have the managerial skills or tools to do this? Who should be doing this Dr. Frankenstein-like tinkering with culture? Search the organizational chart and try to figure out where responsibility for culture lies in large organizations today. It ain't HR. They are quislings-in-waiting poised to turn state's evidence against employers to comply with a ludicrously long and tragically misguided body of employment law.

Who's responsible for culture? Nobody. Students of CIO-ology (the science of CIOs) will be the first to point out that when a tough job lies unclaimed, it typically comes to roost at the feet of the CIO. Remember re-engineering, ERP and the first move to the Web? Ready or not — the culture job is coming your way. Thought re-engineering was rough? ERP tough sledding? Well, roll up your sleeves, because managing, nurturing and modifying culture isn't a walk in the park.

Still don't believe me? Pete Solvik, the teddy-bear-adorable CIO/quasi-pitchman for grizzly-aggressive Cisco Systems told a gathering of some 150 CIOs that culture is Job 1 in the New Economy (my phrasing, not Pete's).

The current research regarding the migration of large organizations from lipstick-on-a-pig Web trivialities to transformed Internet corporations indicates that one best practice is the establishment of a "cultural transformation program." Culture must be addressed explicitly. And the CIO is the dude/dudette who's going to "do" culture.

How many of you feel ready to tackle the Master of Culture challenge? How many of you understand that culture is something that can be measured and understood? If you were to consult a dictionary to try to tie down what this culture beastie is all about, you would find one definition being "the set of shared attitudes, values, goals and practices that characterizes a company or corporation." So, it's both a thing and a process.

My advice: Get busy doing the culture thing, and put in place a process to help you do it. ▀

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READERS' LETTERS

Predicting the unpredictable

AS I FANCY myself a futurist, I have some alternative predictions ["Darker Days Ahead," Business, Sept. 25]:

The mass exodus of programmers to the U.S. will continue due to low pay in other countries, and in five years, every single programmer in the world will be working in the U.S.

The quality of software will degrade significantly. Octogenarians will be called back into the IT workforce to help clean up the mess.

In a last-ditch effort, U.S. companies will train secretaries, janitors and cooks to become programmers. They will continue to overlook quality IT personnel in lieu of the lower-paid trainees, exacerbating the already poor

quality of software. Highly skilled programmers willing to retrain themselves and to go to any lengths to stay on the leading edge will be the mentors for the digital proletariat.

James Bell
Charlotte, N.C.
xml_programmer@yahoo.com

NO DISRESPECT intended, but anyone can make a prediction. Your futurists seem to ignore a simple fact of life: People follow the money. If IT wages fall, there will be no hordes of eager young people pursuing IT careers and there will be no compelling reason to look overseas for cheaper IT talent. And believe it or not, there is a difference between people who have earned degrees and those who have not. Reality is somewhere in

between the extremes that were presented in your article.

Hmmm. Maybe I should consider a second career as a futurist. What are the hours?

John Russo
Computer specialist
West Haven, Conn.

HOW DARK can the future be if 80-year-olds will still be on project teams with teen-agers? Thanks for the witless laugh!

Gerard Gagliano
Software Innovations Inc.
Albuquerque, N.M.

I AGREE WITH most of the comments in the article, but computer skills are not the same as IT skills. As an IT instructor for over 10 years, I have seen plenty of students who are proficient with computers but have no clue what IT is about. They can use the Internet, download MP3s, create CDs and play online games but can't represent a simple task with mathematical equations, which are the foundation of IT.

Albert Huang
Stockton, Calif.

THE FIRST time I heard labor overpopulation predicted was in the '60s, when Cobol was introduced. They said, "It's just English. Anybody can write this language, and it's self-documenting." Futurists are wrong because IS goes in directions nobody, not even Microsoft, can predict. It may sound good, but they have as much of a chance being right using a Ouija board.

Bruce A. Young
Consultant
Highlands Ranch, Colo.
byoung1@earthlink.net

The laptop isn't in decline

I WAS RATHER shocked to see David Moschella declare that the laptop era is nearing its end ["The Laptop Era Is Nearing Its End," News Opinion, Sept. 25]. His whole premise is centered on the ability to collect e-mail while an individual is away from his base of operations. To believe that is the only reason someone would use a laptop is incredibly shortsighted. Many people rely on the portability of the machine to be productive at times and places where it is impractical to use a desktop PC.

Joseph Adkison
Austin, Texas

MR. MOSCHELLA, snap out of it! There are lots of other uses for laptops beyond e-mail. In the engineering world, laptops provide solutions to a plethora of needs: portable data-acquisition systems,

portable network nodes, controllers, calibrators, etc. And any true professional doesn't give a damn about what looks cool and what doesn't; that's for high-school kids.

Jeremy Steele
Columbus, Ind.

Man of Steel a good fit for IT

I FEEL A LITTLE silly writing this, since I don't disagree with the substance of Maryfran Johnson's editorial, but I disagree with her characterization of Superman ["Superman Syndrome," News Opinion, Sept. 25]. She makes him out to be a fly-by-night consultant, missing out on his character.

His repertoire of skills is not the sum of the man. Time after time, he has shown that it is not his powers but his determination, intelligence and humanity that have made him a hero. Just as a deep knowledge of C++ does not make a CIO, superpowers do not make a hero.

"He never was much of a team player, anyway," Johnson wrote. Again, I must disagree. While Superman was not a founding member of the Justice League of America (JLA), he has proved to be one of its best leaders and has become one of the organization's backbones. If anything, he pushes for teamwork. I think she has him confused with Batman, who, though a member of the JLA, prefers to work alone. In sum, I think Superman would make a great member of an IT team. He works well with others, shows leadership and has proved able to learn new technologies, including those of extraterrestrial origin.

Paul Chernoff
Director of IT
Washingtonian Magazine
Washington
pchernoff@washingtsonian.com

WHEN MS. JOHNSON re-searched her column, I am surprised she took no notice of Mr. Kent's significant role in the Justice League of America or in various team-ups such as with Batman in World's Finest. In addition, with more than 60 years of experience on the job, his skills are hardly limited to strength, flying and X-ray vision. Along with superspeed, heat vision and invulnerability, he has experience in a range of critical situations and has dealt with more aliens, magical beings and robots than anyone else on the planet.

Would I hire him as a CIO? Not unless he met the criteria established for the position. But to denigrate the gentleman for this failure makes as much sense as asking CIOs to create diamonds by putting lumps of coal in their hands and pressing them together.

Charlie Seelig
Bridgewater, Mass.

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- Title of Publication: Computerworld
- Publication No.: 00104841
- Date of filing: October 1, 2000
- Frequency of issue: weekly, with a single combined issue the last week in December, and first week in January.
- Number of issues published annually: 51
- Annual subscription price: \$58.00
- Location of known office of publication: 500 Old Connecticut Path, Framingham, MA 01701-9171 (Middlesex Central County).
- Location of the headquarters of general business offices of the publishers: 500 Old Connecticut Path, Framingham, MA 01701-9171 (Middlesex County).
- Names and addresses of the publisher, editor and executive editor: Publisher, Joe Levy, 500 Old Connecticut Path, Framingham, MA 01701-9171. Editor-in-Chief, Maryfran Johnson, 500 Old Connecticut Path, Framingham, MA 01701-9171. Editor, Patricia Keefe, 500 Old Connecticut Path, Framingham, MA 01701-9171.
- Owner: International Data Group, 1 Exeter Plaza, 15th Floor, Boston, MA 02116-2851.
- Known bondholders, mortgages and other security holders owning or holding 1% or more of total amount of bonds, mortgages or other securities: International Data Group, 1 Exeter Plaza, 15th Floor, Boston, MA 02116-2851.
- For completion by nonprofit organizations authorized to mail at special rates: Not applicable.
- Publication Name: COMPUTERWORLD
- Issue date for circulation data below: September 25, 2000.
- Extent and nature of circulation:

	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total number of copies printed (net press run)	261,026	267,684
B. Paid and/or requested circulation		
1. Outside-County Mail Subscriptions State on Form 3541	251,378	251,717
2. In-County Subscriptions	0	0
3. Sales through dealers and carriers, street vendors, counter sales, and other non-USPS paid distribution	0	0
4. Other classes mailed through the USPS	0	0
C. Total paid and/or requested circulation	251,378	251,717
D. Free distribution by mail, carrier or other means, samples, complimentary and other free copies		
1. Outside-County as stated on form 3541	5,432	5,065
2. In-County as stated on form 3541	0	0
3. Other classes mailed through the USPS	0	0
E. Free distribution outside the mail, carriers or other means	3,606	10,282
F. Total distribution (Sum of D and E)	9,038	15,347
G. Total distribution (Sum of C and F)	260,416	267,064
H. Copies not distributed	610	620
I. Total (Sum of 15c and 15f - should equal net press run shown in A)	261,026	267,684
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BUSINESS

SWITCHING INTO HIGH GEAR

Freight carriers haven't been leading the charge on the information technology front. But industry giant Consolidated Freightways has filled a new vice president of e-commerce position and is transforming its Web site into a state-of-the-art self-service destination. **▶ 46**

TIME TO SHAPE UP

Why don't more online shoppers buy stuff online? Because retailers make it too difficult for them, writes Kevin Fogarty. But, he warns, if companies want a share of the \$12 billion expected from e-commerce holiday sales, they had better get their acts together and start giving customers what they want — easy, secure and reliable service. **▶ 46**

TRADING WARS

After receiving much criticism, Nasdaq has announced changes in its proposed Super-Montage stock trading system. Some former critics say they're pleased by the alterations, but others say Nasdaq still has a long way to go. **▶ 48**

A NEW KIND OF GURU

Today's employees are committed to themselves, not their companies, writes Pimm Fox. And because of the hot job market, workers can afford to call the shots.

It's a trend that Guru.com, an online freelance resource, is getting rich on. But, Fox asks, can this trend last? **▶ 50**

LEAP OF FAITH

One day, Tom Ashbrook was at the height of his career as a deputy managing editor at *The Boston Globe*. The next, he was a struggling entrepreneur. In an interview with *Computerworld* editor Rick Saia, Ashbrook talks about the strain that launching his dot-com company, HomePortfolio.com, put on his family and what he learned from the experience. **▶ 52**

NORTHERN GRIT

Tucked between the Arctic Circle and the North Pole is Nunavut. It's a land where workers disappear for weeks-long fishing or hunting trips and a walk to the coffee shop could mean life or death. But it's also a land that refuses to let climactic or cultural obstacles get in the way of its IT plans. **▶ 54**

QUICKSTUDY: RISKY BUSINESS

What happens to a business' bottom line when a hurricane hits? What if a company experiences a failed Christmas sales push? Assessing risks and weighing the consequences is just as critical for companies as setting up a business plan, analysts say. But not enough businesses heed such advice. **▶ 64**

MORE

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BROADBANDING has de-emphasized titles to the point where employees don't consider them when changing responsibilities, says Paul Hoebeman, vice president of information systems at Home Depot



REDEFINING CAREER PATHS

FORGET ABOUT THE TRADITIONAL HIERARCHY. Innovative companies are redefining success by rewarding employees who take on new skills and areas of responsibility. With career broadbanding, which categorizes pay scales and job levels into a number of "bands," neither lofty titles nor managerial experience is the bottom line, and horizontal moves can actually help careers take off.

58

Consolidated Freightways Hits E-Highway

Names first-ever
e-commerce VP

BY LINDA ROSENCRANCE

Call him the steward of Consolidated Freightways Corp.'s (CF) online services.

Marty Larson has been tapped as the first-ever vice president of e-commerce and marketing technology at the Vancouver, Wash.-based trucking company. And with the new title comes the hefty task of transforming customers' experiences on the Web in an industry that has been reluctant to embrace new technology.

Patrick Brady, senior vice president of sales and marketing at CF, said the new position reflects the growing impact of technology throughout the transportation industry, its role in marketing and how companies communicate and relate to customers.

"Marty Larson will play a critical role in pointing CF toward technology that is relevant to our customers and relevant to the operations of our company," he said.

CF is a long-haul, less-than-truckload freight carrier that gathers small shipments from a number of customers, sometimes as many as 20, and consolidates them on one trailer.

According to Larson, 42, who has been with the company for 18 years, the new Web site allows customers to conduct business in a "self-service" environment.

"We want to . . . make it easier for customers to do business with us," he said. "Customers used to get information via the telephone or fax, but now they want to use the Internet because they can access information on demand."

By making the site easier to use, Larson said he hopes to draw more customers. Already, as many as 5,000 of the company's 155,000 customers log on to CF.com every day.

Once online, they can create and print a single bill of lading (a delivery receipt), download or print shipping forms and freight labels, schedule shipments, pickups, track shipments in real time, receive routing-guide and terminal informa-

tion, file freight claims, submit credit applications, access shipping documents and request and obtain invoicing information and account status.

Susie Van Stratten, a customer service representative at ACI — The Display People, a manufacturer of enclosed, freestanding display cases in Covina, Calif., said she often logs on to CF.com to look up and print out bills of lading, as well as to track and trace shipments.

"It's much easier and

takes less time than having to make a telephone call and then getting the information faxed to us," she said. "Because it is less time-consuming, we're able to be there for our customers and we're able to tell them the last area where their shipment was and when it will arrive at the next terminal."

Peter Carew, a transportation analyst at Freightliner Corp., a manufacturer of heavy-duty trucks in Portland, Ore., said his com-



MARTY LARSON:
CF's new Web site
offers self-service

KEVIN FOGARTY/BRICKS AND CLICKS

E-retailing still stinks

I HAD A FRIEND ONCE whose insight on personal relations and prejudice was that "stereotypes exist because stereotypes exist."

Pretty intolerant, really, but he was right in one sense. I know too many slimy lawyers, boring accountants and programmers who can't communicate with biological organisms to really question the validity of some stereotypes.

But one stereotype that I thought had gone away is, in fact, as real as it ever was. Retailers still generally stink at e-commerce.

Oh, they've come a long way, no doubt. Almost everyone now has a Web site and is willing, however grudgingly, to sell stuff through it. But if you're hoping the Web will take the edge off the stress during the holiday shopping season — or hoping your own Web site will enchant customers and help you build market share — the odds are seriously against you.

In a recent study, Giga Information Group found that two-thirds of the 200 major sites it studied didn't supply action links that would let users easily buy or get more information about a product, 60% didn't provide links to a

privacy policy from the home page and 43% were missing basic aids like navigation bars and links to the home page.

Things like that are simple, and they're easy to overlook, but they're vital to the usability of the site. Giga didn't find even one site that had all the navigation aids it considered standard.

That's bad news, especially since an online retail analysis from BizRate.com that came out last week predicted that holiday shopping season sales will top \$12 billion for the quarter — more than double last year's total.

The same report describes online customers as fairly loyal, buying about two-thirds of all their online purchases from one merchant.

How do you grab those customers? An AT&T sur-

vey of 150 online retailers showed — and other studies agree — that customers aren't looking for the most whiz-bang site. They don't necessarily want to buy using small-screen, awkward smart phones or handhelds; they don't want the jazziest graphics or JavaScripts; they don't want the most personalized, community-oriented, customer-responsive site in the world.

They want to use the Web, and they want it to be easy and predictable, just like at a store.

Moving to the Web

They want to know that you keep their data private. They want to know that you'll deliver on time. They want to easily get to a copy of your privacy policy and know that you're sticking to it. They want a confirmation that says you received an order, states when the order will arrive and contains a tracking number that they can use to find out what's

happening to the order. They want to be able to find out more about a product than what you put on the screen the first time they see it.

They want to be able to search for what they want without having to wade through screens of extraneous marketing information that you think is important. They want a phone number on the site that they can find easily.

They want to talk to someone who can answer their questions and, if necessary, order the product for them.

They don't want a generic site with a shopping cart, an e-mail address for customer service and a help desk staff that knows little more than they do.

That's the stereotype of the bricks-and-clicks retailer (and the dot-coms, for that matter), but it's not the reality consumers are willing to put up with anymore.

So if you want a bigger piece of that \$12 billion this holiday season, forget the flourishes, at least for now. Just make sure you've covered the basics. ▀



KEVIN FOGARTY IS
Computerworld's
features editor.
Contact him at
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Nasdaq Changes Plan To Appease Critics

Tries to give electronic communications networks a fair shake on SuperMontage

BY MARIA TROMBLY

NASDAQ STOCK Market Inc. announced changes to its proposed SuperMontage front-end trading system after operators of private trading networks and other critics raised concerns about the technology.

Companies that operate electronic communications networks (ECN), in which investors trade directly with one another, have complained that SuperMontage would discriminate against their trading systems, because Nasdaq has been planning to automatically place ECNs that charge fees at the bottom of the list of available trades. ECNs use Nasdaq to try to find buyers and sellers for investors who can't find a match themselves.

As a result of the criticism,

Washington-based Nasdaq said ECN-generated prices will be listed among the other trades as the default setting in SuperMontage, and users will be able to create their own views on-screen.

"On further reflection, it was determined that it was not Nasdaq's role to determine the significance of [ECN] access fees," Nasdaq President Richard Ketchum said during a recent teleconference.

Ketchum added that SuperMontage users will be able to choose whether they want trades listed solely by price; by price, with ECNs listed last; or by some other measure, such as the size of the trade.

More Details

Ketchum said SuperMontage will give traders more detailed information about the stock market than they get with Nasdaq's current SelectNet front-end system. The additional information can be bought by ECNs and other market participants, who can then provide more detailed displays to traders or use the information to improve their order-routing capabilities, according to Ketchum.

The modifications being made by Nasdaq satisfied one

key ECN — Bloomberg Tradebook LLC in New York.

Nasdaq's announcement "addresses the concerns we had," said Kevin Foley, chairman and CEO of Bloomberg Tradebook, a subsidiary of New York-based Bloomberg LP.

But in a statement, Doug Atkin, CEO of New York-based Instinet Corp., called Nasdaq's latest proposal "more of the same" and said he still isn't satisfied with the SuperMontage plans, which have gone through seven amendments since they were originally sub-

"We agree with Nasdaq that there should be choice," he said. "However, instead of giving market makers the choice of stepping ahead of investors' orders, Nasdaq should give investors the choice of having their orders treated fairly. We believe that investors' orders should remain at the front of the line."

A Strong Force

Instinet is the largest of the ECNs, said Dana Stiffler, an analyst at Newton, Mass.-based Meridien Research Inc. "On their own, they're a significant market," she said. "And given their size, the SEC will have to pay attention to their objections."

If the SEC does side with Nasdaq and give final approval to the SuperMontage



NASDAQ plans to replace its SelectNet system with the SuperMontage system but has received criticism about the priority order of its listings

mitted to the Securities and Exchange Commission (SEC) last October.

In particular, Atkin said, Nasdaq's decision to let users choose how to display orders doesn't go far enough to protect investors who list their trade offers with ECNs.

proposal, development of the new system should be finished by late next summer or early next fall, according to Nasdaq officials.

The modifications "will involve significant additional work but will not result in delay," Ketchum said. ▀

GetThere Targets Travel at Small, Midsize Businesses

BY MICHAEL MEEHAN

GetThere Inc. last week announced an online corporate travel-booking system for small and midsize companies.

Travel agencies such as American Express Co. and Carlson Wagonlit Travel, both based in New York, and air carriers such as U.K.-based British Airways PLC will be able to create their own branded por-

tals for business travelers, using the GetThere technology.

Individual companies will also be able to create their own subsites, accessible only to the company's employees, that can administer preferred-carrier agreements and analyze the company's travel-spending habits.

The move marks the first significant step by Menlo Park,

Calif.-based GetThere to tap the bricks-and-mortar-dominated world of smaller corporate travel services.

GetThere, which was purchased by Sabre Inc. in Forth Worth, Texas, last month, is the only sizable business-to-business corporate travel provider to tailor products specifically to small and midsize companies.

Jeff Palmer, GetThere's vice president for strategic development, said the key to the portals is their ability to let users customize their pages rather than be forced into a "one-for-all travel Web site." ▀

HR Seeks Smarter IT Tools

BY JULEKHA DASH

Self-service human resources applications that let employees update personal information online have been so successful that human resources executives are ready to take the next step with "intelligent" applications that handle more strategic tasks.

For instance, if an employee changed his address, an intelligent self-service application could automatically retrieve a new tax form so the employee could update the information, said Naomi Bloom, a managing partner at workforce consulting firm Bloom & Wallace in Fort Myers, Fla.

Many users said they are interested in applications that let them look even further into their human resources data.

For example, Birgit Nettertho Seeth, a policy specialist at the Army and Air Force Exchange Service in Dallas, said an application that provides a mere checklist of employee status-change forms doesn't add as much value as an application that determines the most effective hiring methods or which divisions have the highest turnover.

As a company that has spent the past couple of years building a virtual university, Tosco Shared Services, a division of Tosco Corp., in Tempe, Ariz., could benefit from an application that helps it determine the return on investment of its educational activities, said project manager Mary Maddigan.

But although major human resources vendors offer workforce analyses that let users calculate such figures, Bloom said those types of technologies work only if human resources is willing to do some "heavy lifting," such as building competency profiles for employees and determining performance metrics.

"You can't improve quality if you don't know what you're looking for," Maddigan said. "Without that, you can't unleash the capability" of the technology. ▀

Trading Fairness

Nasdaq promises to make its SuperMontage trading system more fair to ECNs.

Choice: Instead of listing ECNs — which can charge access fees — after the market makers, users will be able to choose how orders are listed.

Transparency: Nasdaq will build a data feed to level the playing field. The feed will make available the information that underlies what's displayed on SuperMontage.

Information regarding the entity sending an order: The SEC has allowed ECNs to refuse to provide liquidity to entities that don't pay their access fees. Accordingly, SuperMontage will include the order-sender's identity. For the sake of fairness, the information will be included for ECNs and market makers.

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PIMM FOX/VOICE FROM THE VALLEY

Me Generation guru

NOT WORK 14 HOURS A DAY? Not work for the same company forever? What's wrong with people today? Has the hot economy created a generation of workers whose allegiance is to themselves, not their companies?

Seems so. And San Francisco-based Guru.com is taking advantage of this trend.

Guru.com is an online employment resource designed to give companies and individuals a place to exchange information about freelance projects, skills and availability.

"Guru.com answers a need for people who want a rewarding professional career but don't want to work 14 hours a day for a company all their lives," explains Andrew J. Blum, a managing partner at The Trium Group, a leadership consulting practice with offices in San Francisco and Cambridge, Mass., that has organized

off-site leadership exercises for Guru.com.

But why would people rather deal with a Web site than with human contacts?

"Look — there are people who have small children and they don't want to miss those years, but they have experience and can really do work for a company. So working freelance makes sense for them," says Blum.

"For companies, this makes economic sense because they may have projects that only require a certain number of hours," says Blum. "The nature of work is changing."

There are "many people

who would rather work hard for a couple of months and then take two months off," he adds.

More freelance and project-based work is now available, which means times are good not just for workers but for Guru.com as well. In mid-September, the start-up raised \$44 million in its third round of private funding, bringing the total investment to \$63 million.



PIMM FOX is Computerworld's West Coast bureau chief. Contact him at pimm_fox@computerworld.com

And with the U.S. economy near full employment — at just 4.1% unemployment in August — workers are encountering the best job market in years.

With information systems graduates attracting a lot of interest (the average salary offered to IS grads has jumped 10.6% since July 1999 to \$43,402, according to the National Association of Colleges and Employers), is it any wonder that people with skills such as Java programming and Microsoft SQL Server 7.0 back-end expertise can call their own shots when it comes to how much

they want to work?

Jon Slavet, co-CEO of Guru.com, recently told me that more than 350,000 people have registered as gurus at the site.

He also says that the company offers incorporation services for independently run businesses and is a conduit for tax and finance questions from independent professionals.

But with the economy still going full tilt, Guru doesn't yet offer advice to those who have been laid off.

What else would you expect from a generation that's never faced a recession? ▀

Retailers Facing Harsh Music

BY GEORGE A. CHIDI JR. AND ANN HARRISON

Caught between free music download sites and the record labels' vigorous legal battles against piracy are the traditional brick-and-mortar music stores looking to survive in a changing, often hostile commercial landscape. In the midst of it all, the National Association of Recording Merchandisers (NARM) is recommending that retailers buckle up for a rough ride.

Digital distribution, particularly file-streaming technolo-

gy, will seriously disrupt the music business, according to a report released last week by Marlton, N.J.-based NARM and composed by Internet consulting firm Emerald Solutions Inc. in Portland, Ore.

"It separates the content from the container. The question is, how will that make life different for people who make their living moving the physical goods?" asked Michael Norkus, president of Emerald Solutions' strategy group.

Online music sales have the potential to benefit all seg-

ments of the industry if firms can leverage their traditional strengths and create compelling consumer value propositions, said Norkus. Because of technological and financial hurdles in setting up an online music store, businesses with experience, money and brick-and-mortar brand names are better prepared to succeed in online music retailing, he adds.

But even as retailers move toward virtual reality, physical reality isn't going anywhere. Consumers will still want to order CDs and go to real stores, said Jim Donio, executive vice president of NARM.

"I think that right now, for the foreseeable future, people are confident that physical CDs in a package in a store will be the mainstay for the future," Donio added. "That doesn't mean that this [digital] distribution method won't be growing... but the research says it's going to be a small part of the business."

Still, the recording industry is trying to counteract what a report from Cambridge, Mass.-based Forrester Research Inc. calls an irreversible trend toward the unauthorized use of digital music files on sites like Napster.com.

Efforts by the music industry to develop content control systems, such as the Secure Digital Music Initiative forum in San Diego, are being closely watched by the security community to determine their strength in the marketplace. ▀

Chidi writes for the IDG News Service in Boston.

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The Look After 'The Leap'



DAVID ZADIG

WHO IS HE?

Tom Ashbrook, a former reporter and deputy managing editor at *The Boston Globe*, is a co-founder and vice chairman of HomePortfolio.com Inc. in Newton, Mass. The founding of HomePortfolio, and the changes it caused in Ashbrook's life, are chronicled in his book *The Leap*.

In 1996, Tom Ashbrook left a lengthy career as a newspaper journalist, hooked up with a longtime friend and plunged into the then-fledgling world of e-commerce. After more than 15 years in "old media" as a foreign correspondent, then as deputy managing editor of The Boston Globe, he saw the promise of "new media" in what became HomePortfolio.com Inc. in Newton, Mass., which helps homeowners furnish their homes and links them with suppliers of the products they need.

*In Ashbrook's recent book, *The Leap: A Memoir of Love and Madness in the**

*Internet Gold Rush (Houghton Mifflin Co., 2000), he paints a dramatic portrait of how the struggles of launching a Web-based business in the early days of the Internet strained his family life. There were long days at the office that sometimes ended at midnight, months of forgoing a salary as the new company sought venture capital funding and even an emotional e-mail from his wife, Danielle, wondering if HomePortfolio — and the Ashbrook family's finances — would be able to ride out the storm. In one telling paragraph, he writes of how he walked away from a potential \$1 million in stock options he would have received had he stayed at the Globe just one more year. When Danielle read that in the book's galley proofs, she "was not a happy camper," he told Computerworld's **Rick Saia** in an interview.*

But in 1998, the venture capital money came in and HomePortfolio's fortunes, as well as life at the Ashbrook home, began to turn for the better. As for those stock options, Ashbrook says, Danielle has "developed a sense of humor about it."

If someone came up to you today and said, "I'm gonna launch a Web start-up," what would you tell him? First, I'd sit him down for a long talk. I would say, No. 1, "Know your personal tolerance for risk." When you walk away from that last paycheck [at the job you're leaving] to start something brand new, the vulnerability hits you like ice water. And you better assess before you take the leap what your capacity for risk-taking really is. No. 2, I'd say, "Don't get involved in any kind of copycat Web play at this point. The me-too era is over. . . . Be sure that you've got a fresh and singular idea."

On the personal front, I'd advise them to brace their love life . . . because the stress to the system of launching a start-up can be enormous, and it comes right home with you. It tends to take over your life for awhile. So batten down the hatches at home.

Finally, don't do it just for the [big] money. You may make it and you may not. So get involved with an effort that you have a

passion for. That passion will carry you through the rough patches and will bring you satisfaction, whether you become a billionaire or not.

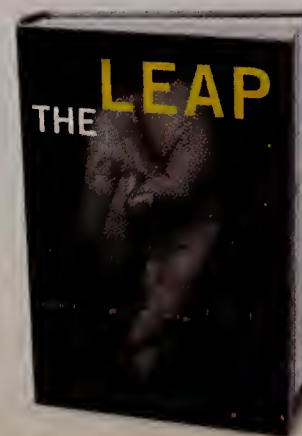
With the clarity of hindsight, what would you have done differently? I'd like to say that I'd pick my timing better, that I wouldn't have dived in so early, because diving in as far ahead of the market as we did made a long walk in the desert almost inevitable. On the other hand, we had no special lock on this home-design industry, and if we hadn't dived in early, we wouldn't have been able to sew up the many advantages that being early brought us. So it was painful, but maybe that pain was necessary, given where we were starting.

You endured financial challenges and family stress that would have caused others to throw up their hands and walk away from this dream. What was the No. 1 factor that kept you going? I know that pride is a sin. But once I cast my lot with this wild idea, it became kind of a do-or-die challenge to me. Maybe there are times in life when, for the health of your soul, you've gotta commit to something all the way. Now, that kind of talk made my wife crazy, but this became my odyssey, my personal life challenge.

In retrospect, you can see that we were really all caught in a gold-rush fever, maybe even a kind of millennial madness. . . . The whole experience made me think about my [English and German] immigrant forbears. What was it that made them, instead of their neighbor, climb on the boat and sail out into that big ocean that they had never crossed before? I don't know. But some certain people and most Americans who are the offspring of such people cannot resist a sexy frontier. I guess I was just one of those people.

So, would you do it all over again? I would devoutly hope and pray that if I did it again, I would be smart enough and now experienced enough not to have to attack so many elements of a start-up with a brute-force approach.

My understanding of what it takes to create a successful business model is much more lucid. . . . So, would I want to do it again, the way I did it the first time? Oh God! Please! No! But would I consider doing it again with the benefit of the experience I gained? Don't tell my wife, but I might. ▀



NEW BANDWIDTH
NEW WIRELESS
NEW STANDARDS
NEW DEMANDS
NEW EXPECTATIONS
NEW WORK
[NEW WORLD]



NEW WORLD
NEW ATTITUDE
NEW SERVERS
[@server]



NEW
WORLD

e-business.

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Based on SPECweb99 benchmark result current as of 9/20/00. See www.spec.org for details. ² Certain enablement fees may apply. ³ Price claim based on z900 Configuration for Linux (\$1,200,000) running 2500 separate instances of Linux. Storage not included. See www.ibm.com/eserver/zseries/linuxconfig for full details on this configuration. ⁴ IBM list price for xSeries 330 Model 865411Y with 800MHz processor, 256MB memory and open bay, not including hard drive, operating systems or other options. ⁵ IBM list price for xSeries 200 Model 847840X with 800MHz processor, 128MB memory and open bay, not including hard drive, operating systems or other options. ⁶ IBM list price for iSeries 400 Model 820, FC # 2395, uni-processor, 256MB memory and 8.58GB disk. ⁷ IBM list price for iSeries 400 Model 270, FC # 2422, uni-processor, 256MB memory and 8.58GB disk. ⁸ Rated #1 UNIX operating system: D.H. Brown Operating System Scorecard, 3/24/00. ⁹ IBM list price for pSeries 680 with 6 processors, 4GB memory and 9.1GB disk and unlimited user license for AIX 4.3.3. ¹⁰ Special price available only through ShopIBM for pSeries 640 with POWER3-II 375MHz copper chip, 1-way, 256MB memory, 9.1GB disk and unlimited user license of AIX 4.3.3. ¹¹ Requires available Parallel Sysplex® technology. ¹² In a full Parallel Sysplex cluster. ¹³ Price claim based on z900 Configuration for Linux (\$1,200,000) running 2500 separate instances of Linux. Storage not included. See www.ibm.com/eserver/zseries/linuxconfig for full details on this configuration. Actual reseller prices on all systems may vary. List prices, specifications and availability may change without notice. IBM, iSeries, pSeries, zSeries, xSeries, Netfinity, S/390, Parallel Sysplex, AIX, WebSphere, Light Path Diagnostics, Netfinity Director and the e-business logo are trademarks or registered trademarks of International Business Machines Corporation. Lotus and Domino are trademarks or registered trademarks of the Lotus Development Corporation. UNIX is a registered trademark of The Open Group. Java and all Java-related trademarks and logos are trademarks of Sun Microsystems Inc. in the United States and other countries. Windows and Windows NT are registered trademarks of Microsoft Corporation. Intel and Pentium are registered trademarks of Intel Corporation. Linux is a registered trademark of Linus Torvalds. All other companies or products are trademarks or registered trademarks of their respective companies. ©2000 IBM Corporation. All rights reserved.

WORKSTYLES

What It's Like to Work at . . . AFLAC Inc.

Interviewee: Philip Smith, promoted last month from senior programmer/analyst to manager of client/server Web development

Company: American Family Life Assurance Company of Columbus Inc. (AFLAC)

Main location: Columbus, Ga.

Number of information technology employees: 400 in the U.S.; 20 in Web development

Number of employees (end users): 4,900

Web site traffic: "That's increased exponentially since the duck campaign started this year [the company's TV advertisements feature a duck quacking the company's name]. In August, we had 1.1 million hits on our home page, vs. 98,000 in August of 1999. That's a 946% increase. It's amazing what a little duck can do for you."

What kind of pressure has the duck put on IT? "Sales leads for the first three months of this year outpaced all of those for 1998 and 1999 combined. So we've had to beef up a lot of our extranet systems for our field sales associates. Everything is moving online anyway, but we pushed it along a little faster. But we've had no major meltdowns, knock on wood."

What activities fall under the Web development group?

"The Internet site, the intranet and an extranet for our 30,000-person independent field sales force."

Major initiatives: A Web site redesign to give it a "real fun" look and feel (with partner Macquarium Inc. in Atlanta) and a new e-mail application that will enable AFLAC to send mass e-mails to the field sales force.

How is your transition to management going? "It's definitely a different monster. I'm used to being all technology-oriented, and now I have more of an administrative role, making sure people follow through and meet their dates. But I was always a task-oriented programmer into the details, so I think it will work out pretty well."

Have you had any management training? "Not yet, but I have a list of about 15 to 20 classes that I'll take over the next few months. We have six or seven in-house instructors that pro-

vide a wide range of training, and we have an external training vendor."

Employee reviews: An annual self-appraisal system; supervisors review the self-assessments and add their own comments, and the final document is stored online for viewing by other managers as needed.

Bonus programs: "In the past couple of years, they've been incorporating more project-oriented incentives, like a \$100 cash reward for meeting a project milestone. And we have a companywide yearly bonus based on revenue."

Dress code: Business casual

Workday: "My team gets here between 7 and 8 a.m. and leaves between 4:30 and 6 p.m. We're good about keeping normal, steady hours."

Come on, Really? "If a deadline is approaching, we might have some long days."

Kind of offices: "Cluttered, right now. We're building a large new campus that will [consolidate] employees from several different locations, but we've already outgrown the campus, and it's not even built yet. Right now, we're spread out all over Columbus. The majority of IT is all together in an old building that was a dairy before, but we also have local IT support in each location."

On-site day care? "We have a dedicated day-care facility for AFLAC employees that's near several of our major buildings, and there will be a second one on the new campus."

Office mascot: The duck. "There's been a craze to get stuffed-animal ducks - quackers and nonquackers. You see them everywhere."

Little perks: Restaurant gift certificates, reward luncheons and annual Christmas parties

Last companywide perk: The annual employee appreciation week in May, which includes performances, games "and a big event for the grand finale - like taking your family to a Braves game or going to Six Flags."

Would employees feel comfortable e-mailing the CEO? "Probably not."

- Leslie Goff

(lgoff@ix.netcom.com)

PETER G. W. KEEN

You and your customers

YOUR COMPANY IS investing heavily in customer relationship management (CRM) tools, has a dynamite Web site and runs a call center armed with customer information on each agent's screen. It's customer-centric — and "customer" is today's mantra.

But hold on. First, answer these four simple, informal questions that — for me — distinguish mantra from reality. If your company scores fewer than four "yes" answers, then it's kidding itself. It may have a great CRM strategy, but it doesn't have a true customer relationship perspective.

1. Are all customer e-mail messages automatically acknowledged and answered, with each query or problem fully and personally responded to by knowledgeable staff?

2. Is online handling of credit and payment terms for new customers an integral component of your CRM base?

3. Are at least 25% of bonuses and related performance incentives based on customer satisfaction metrics?

4. Is your call center staffed by well-trained personnel who are rewarded on the basis of the quality of the customer relationship?

There's a single, common link among these four questions: the quality of the customer experience. A company can't be customer-centric if it ignores the foundations of the experience. Not answering e-mails is saying, "Don't bother us; we're not interested." Surveys routinely show that more than half of all e-business sites send this signal. But they boast of how much they care about the customer.

The second question is perhaps the most revealing about turning customer "focus" into customer relationships. Credit is at the very core of every commercial relationship. While credit cards handle payment for a product or service, they don't address financing terms, lines of credit, loans or leasing, payment schedules and the like. These are particularly key for large consumer purchases and just about everything having to do with small-business e-commerce. Companies often tell me, "We haven't thought about this." That's like saying, "We haven't really thought about the relationship."

The third question falls outside the control and possibly the influence of most people. But the way it's answered sends a very clear signal about the priority that top management really

places on the customer relationship.

A book written by former Marshall Industries CEO Robert Rodin called *Free, Perfect, Now* (Simon & Schuster, 1999) compellingly shows how most organizations' reward systems actually get in the way of effective customer relationships. Sales staff are rewarded for meeting quotas and, in many instances, pushing the product of the month. Production is incented to meet budgets and control costs. The credit function is rewarded for controlling risk, which often means declining customers or at least keeping them waiting.

The performances of IT and human re-

sources largely aren't measured in terms of — or even affected by — customer satisfaction. The companies that are best at customer relationships base their incentives on the relationship. That ought to be the norm, not the exception.

The fourth question deals with an area in which we all have experience, and probably bad memories as well. The call center is often the point of first impression for a customer. Many of us don't deal with our car insurance companies for years, until we have a claim. Contact with PC manufacturers or software companies generally comes as a result of a problem.

But what's a "problem" to the vendor is actually more often a crisis to the customer. For the customer, how this is handled defines the relationship. In that situation, a firm wants the best-trained, most responsive people on the phones. And it should treat them well.

IT is very much at the center of CRM. So it should play a real role

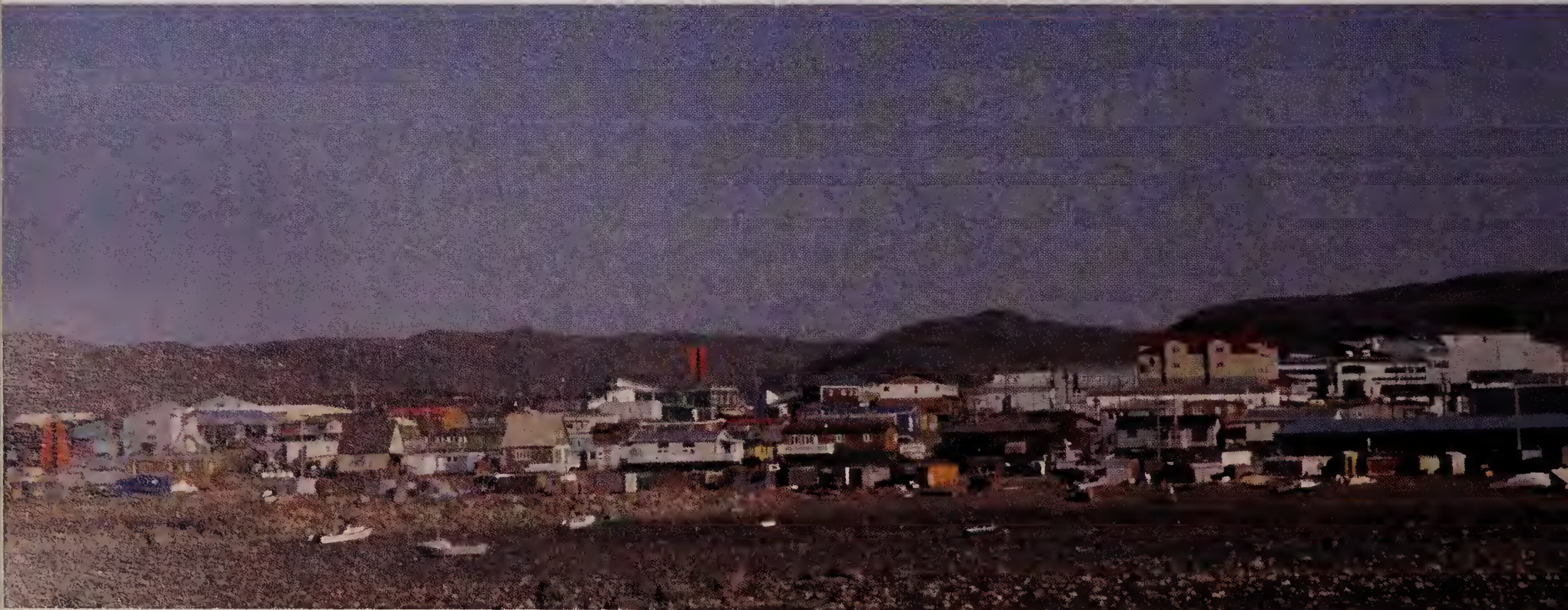
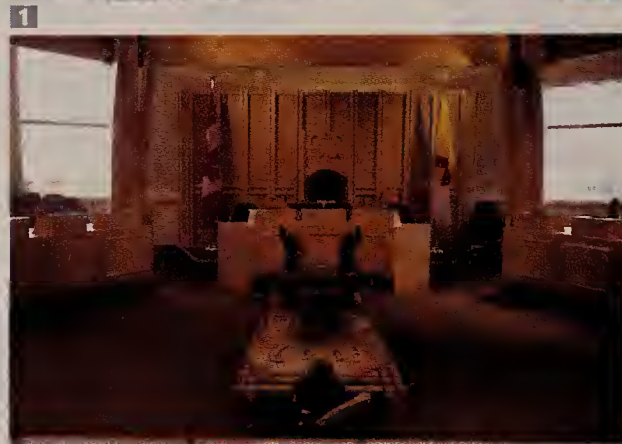
in helping design the customer experience, not just the technology platform. If your company scored 0-for-4 in these questions and you feel you can't do much to change those answers, you'd better try, because otherwise, all that CRM work is literally a waste of time and money. ▀

Keen recently published two books, *The eProcess Edge* (McGraw-Hill, 2000) and *From .Com to .Profit* (Jossey Bass, 2000). Contact him at peter@peterkeen.com.



IT should play a bigger part in serving customers.

Setting up IT operations for the new Arctic government of Nunavut takes creativity, grit and warm mittens.
By Kathleen Melymuka



Starting



3



6



7



8



9

THE COMMUTE: One Monday morning, Ken O'Neill, CIO of the government of Nunavut, left Ottawa for a three-hour flight north to Iqaluit, the capital of the new Canadian territory. The plane couldn't land because of bad weather, so it continued on to the next scheduled stop, Rankin Inlet, about 700 miles west across Hudson Bay. From there, the best choice was to continue about 700 miles farther west to Yellowknife in the Northwest Territories, then south to Edmonton and down to Calgary. Finally, O'Neill took the red-eye back east to Ottawa just in time to catch the next morning's flight to Iqaluit.

WELCOME TO NUNAVUT, where you can't assume anything. "You may set up what you want to do," O'Neill says, "but you have to switch to whatever comes up. It's hard."

O'Neill's understatement is typical of the people who live and work in Nunavut, an endless, windswept tundra on the top of the world, inhabited by the resilient, indigenous Inuit as well as a few hearty pioneers from the south.

Nunavut means "our land" in Inuktitut, the native language of the Inuit. It lies almost entirely between the Arctic Circle and the North Pole. The establishment of the territory was part of Canada's recent settlement of a long-standing Inuit land claim.

On April 1, 1999, 28 backwater communities of the Northwest Territories — with populations as low as 18 and names like Igluligaarjuk (place with a few houses) and Uqsuqtuug (place of plenty of blubber) — became a semiautonomous region with its own government.

Building the information technology infrastructure for that government is the challenge facing O'Neill and other IT folks in Nunavut.

TRUE NORTH: In the Arctic winter, when darkness reigns, the winds may blow the snow so furiously that you can't see planes parked on the tarmac from the school-bus yellow Iqaluit airport terminal. Flight crews tie a rope from the terminal to the aircraft for passengers to cling to while boarding so they don't lose their way and freeze to death in the darkness.

The IT challenge began when Dave Smith was recruited from the private sector, where he had worked with government suppliers, to come north in the fall of 1997 as CIO of the Interim Commission, which was preparing for the soon-to-be-elected new government. He hired Ottawa consultant Nancy Chisholm to set up a project office that would include about eight project managers, systems analysts, tech-

nical architects and database designers and administrators. Unable to find qualified candidates in Nunavut, they finally imported people from Ottawa.

The project team faced the political challenge of dealing with the divergent rules, regulations and agendas of three separate governments: the Canadian federal government, which was the source of funding; the Northwest Territories government, which was still running the area; and the nascent Nunavut government, which would be inaugurated in 18 months.

They faced technical challenges of providing services like e-mail and building a communications infrastructure and a financial system without closing off options that the new government might later want to consider.

But most of all, they faced the challenge of Nunavut itself: ice-bound for most of the year, with virtually no paved roads and accessible only by air except during the three summer months when the sea ice melts and ships can come in.

The climate and the seasons dominate when work can be done, Smith says. A blizzard can easily shut everything down, and there are communities that have gone 10 days without an aircraft being able to land. "If you're a technician that has gone into that community to install a communication circuit and that's when the storm happens, you're there for 10 days," he says. Everyone else who needs you — from your boss to your family — has to wait.

Nunavut provides cultural challenges as well. At certain times of the year, absentee rates may soar as Inuit workers go fishing or hunting — often for weeks. But the southern sojourners try not to lay their own values over the very different northern culture. "Priorities here are not our priorities," Chisholm says. "We can't try to impose our mentality here because this is their mandate and their land."

ARCTIC SUMMER: On her first day in Iqaluit in the summer of 1998, Chisholm hit the sack exhausted. She awoke to bright sunlight before her alarm went off, jumped out of bed, showered, dressed, picked up her briefcase and stepped out into the empty town. Glancing at her watch for the first time, she discovered it was 1:30 a.m.

The environment dictates and hinders technology. When airplanes are unable to land because of bad weather, satellite communications are a blessing. But bandwidth is severely limited, and you can't assume the link will be up when you need it. If a communications circuit goes out and there's a snowstorm, it may be down for days, and at certain times of the year the satellite communications are unreliable because of sunspot activity.

You also can't assume that you will get the specialist you need to repair something. As a result, techni-

PHOTO KEY: 1. Caribou antlers decorate the doorway and rooftop of a house in Iqaluit. 2. A newer house in an upscale neighborhood overlooks downtown Iqaluit. 3. Most signs in Nunavut are in English and syllabic Inuktitut. 4. The meeting room for the legislative assembly in Iqaluit is designed around symbols of Inuit culture. 5. The cemetery on the barren shore of Iqaluit bears more than its share of suicides. 6. Because of the cold, wind and daytime darkness during the school year, public school buildings in Iqaluit are nearly windowless. 7. Nancy Chisholm pulled together the original IT project staff for Nunavut as well as the first help desk. 8. Iqaluit, the capital of Nunavut, sits on a desert tundra. 9. The inukshuk, meaning "like a human," is a stone guidepost in the shape of a person.

Cold

cians design systems with failure in mind. "You have to design the income support [welfare] system so you can cut checks locally so that the people can buy food, because you can't depend on the airplane [to deliver them] or the phone system" to transfer funds, Smith says.

"There's really nothing that you can depend on," he says, and the project team developed IT standards with that in mind. Applications are primarily Microsoft-based, including Word, Exchange for e-mail and Internet Explorer. "We wanted the simplest possible [IT] environment," Smith says, "because if you can't get a specialist to fix your problem, you better not be using complicated things."

Customizable off-the-shelf applications are used in a couple of areas, such as help desk and financials, where a Microsoft option didn't fit, and a handful of systems have been developed with the eccentricities of income support, vital statistics and student financial records. Also, the project staff is using Microsoft Access rapid development tools for several dozen small, highly customized applications.

Jean Denis, a systems consultant in the project office, is working on one such application for the Justice Department. He says the more he works with users, the more they find to automate. "This started as a small kernel to schedule court appearances," he explains. "Now we're hoping to have the [Royal Canadian Mounted Police] file the charges electronically and merge right into this system."

Eventually, what started as small, discreet applications will be consolidated into a comprehensive judicial system.

Having a role to play in the new Nunavut is a matter of life and death to the Inuit, whose traditional culture has been assaulted by modern life, leaving scars of depression and suicide, particularly among teen-agers. The estimated suicide rate for Nunavut is about six times the rate for Canada as a whole and has been steadily increasing since the 1980s.

The new government has mandated that by 2010, 85% of all government positions — including positions in IT — will be held by Inuit people. Right now, however, IT skills are rare.

It's hard to develop local skills because centralized IT training is almost impossible, Smith says. "It's not the time off the job; it's the airplane tickets. And in some cases, you're pulling people out of the community who have never been out before. What do they do with their families when they're out of town on training? It's all those social issues and the travel costs that rule out any kind of centralized training for most things."

HOMESICK: A bright, young Inuk who had never been out of Nunavut was brought down to Ottawa for several weeks of IT training. She was settled into a hotel for the weekend, with the training sessions to begin Monday. She never showed up at class. She had packed her bags and taken the first flight home.

The project office has tried to move the Inuit into IT jobs through on-the-job coaching and mentoring. "There's an understanding that you may not be completely qualified to step into a role, but with mentoring and coaching, the people who have a life here in the community can transfer the skills from the peo-

ple who are not going to stay here," Chisholm says.

In another effort to develop local IT talent, Chisholm set up the first IT help desk in Nunavut just in time for the inauguration of the territory. She knew there was no hope of getting IT specialists on the help desk staff. "People who had that knowledge were out repairing problems," she explains. But she hoped that, with the right design, the help desk could evolve into a repository of IT knowledge that less

expert staff could use and learn by.

She settled on HelpDesk from Royalblue Technologies in New York, partly because it supported this concept. The system provided step-by-step guidance for "hot topics" — frequent IT problems that could be solved by walking the caller through the steps provided on the screen.

More important, it enabled the development of a knowledge base. As a problem is solved in the field, the field technician provides a step-by-step report of what was done along with keywords to help staff find that information when the problem arises again. The hope

is that help desk staff can use this information to walk callers through their simpler problems and save the expense of sending technicians out to the remote communities.

GETTING AHEAD: Ten young people signed on for Gavin Nesbitt's "tech specialist" certification course at Arctic College in Iqaluit. Only two earned the certification, but nine of the original 10 are currently working in IT in the government of Nunavut. "Any IT skills are better than none," Nesbitt says. "If you know anything, it puts you ahead."

Developing Inuit IT expertise is a long-term goal, says Smith. A more immediate concern is recruiting skilled people from anywhere to get the work done. "There's simply a small percentage of people who want to move into that climate," says Smith, who is now a consultant to the project office operating out of Ottawa. He laughs when he hears about the difficulties of recruiting IT folks in the south. "That's not hard," he says. "This is hard."

Although logistics present many challenges in Nunavut, they also provide opportunities for technology to make a huge difference in people's lives, Smith says. For example, because there are no hospitals in

the territory, the government spends millions of dollars on airplane tickets to bring health care professionals into the communities and move patients out for diagnoses. Some communities are testing telemedicine workstations for specialties like dermatology that lend themselves to long-distance diagnostics.

Distance learning seems to be another natural for Nunavut, but both of these initiatives are hindered by the limitations of satellite communications. With rates as low as 64KB/sec., the satellite bandwidth in most Nunavut communities is less than that in most southern homes, Smith says. "The whole community has to run through that tiny little connection." That means if a telemedicine session is going on in a community, the school may not be able to get on the Internet, and the local government might not be able to process payroll checks.

Things will get worse before they get better because the more people who use technology, the more they will strain the available bandwidth. Some believe the government will eventually be forced to lay a cable throughout the territory, but that and many other decisions remain to be made.

COFFEE TO DIE FOR: One dark, cold winter day, the snow was blowing fiercely when Chisholm, on a whim, threw on her hooded coat and mittens and headed for the Fantasy Palace, so named because it's the only place in Iqaluit that serves southern dreams such as latte and cappuccino. About halfway through the 200-yard trek, she realized she had made a potentially fatal mistake. "The wind was really howling, and it was just so cold," she recalls. "I could actually feel my body shutting down. I suddenly realized I might not make it."

Despite the difficulties, the new government has already put a lot of technology in place, says Smith. There are about 1,500 workstations, with roughly 1,000 of them in Iqaluit. Most public servants who work indoors have Pentium-level PCs. There are about 50 servers in Iqaluit, not including print servers, and there are 10 more in the two regional offices. Every community has a nursing center, a public school and a high school — each equipped with at least one PC. Most communities have PCs in the libraries and in some municipal offices.

Despite a good deal of progress against the odds, Nunavut is not the kind of place that nurtures blue-sky optimism. When Smith looks to the future, he does so with the grit and realism of a frontiersman. "The easy applications have been done," he says. "The hard ones are left." ▀

“

We wanted the simplest possible [IT] environment.

DAVE SMITH, CIO,
NUNAVUT INTERIM COMMISSION

The Cold, Hard Facts

Inaugurated: April 1, 1999
Size: Approximately 1.25 million square miles (about one-fourth the size of the U.S.)
Population: 26,000 in 28 remote communities; 85% are Inuit and 56% are under 25 years old
Primary industries: Fishing and hunting
Cottage industry: Stone sculpture
Government-maintained paved road: 21 kilometers
Lowest recorded temperature: -133 degrees



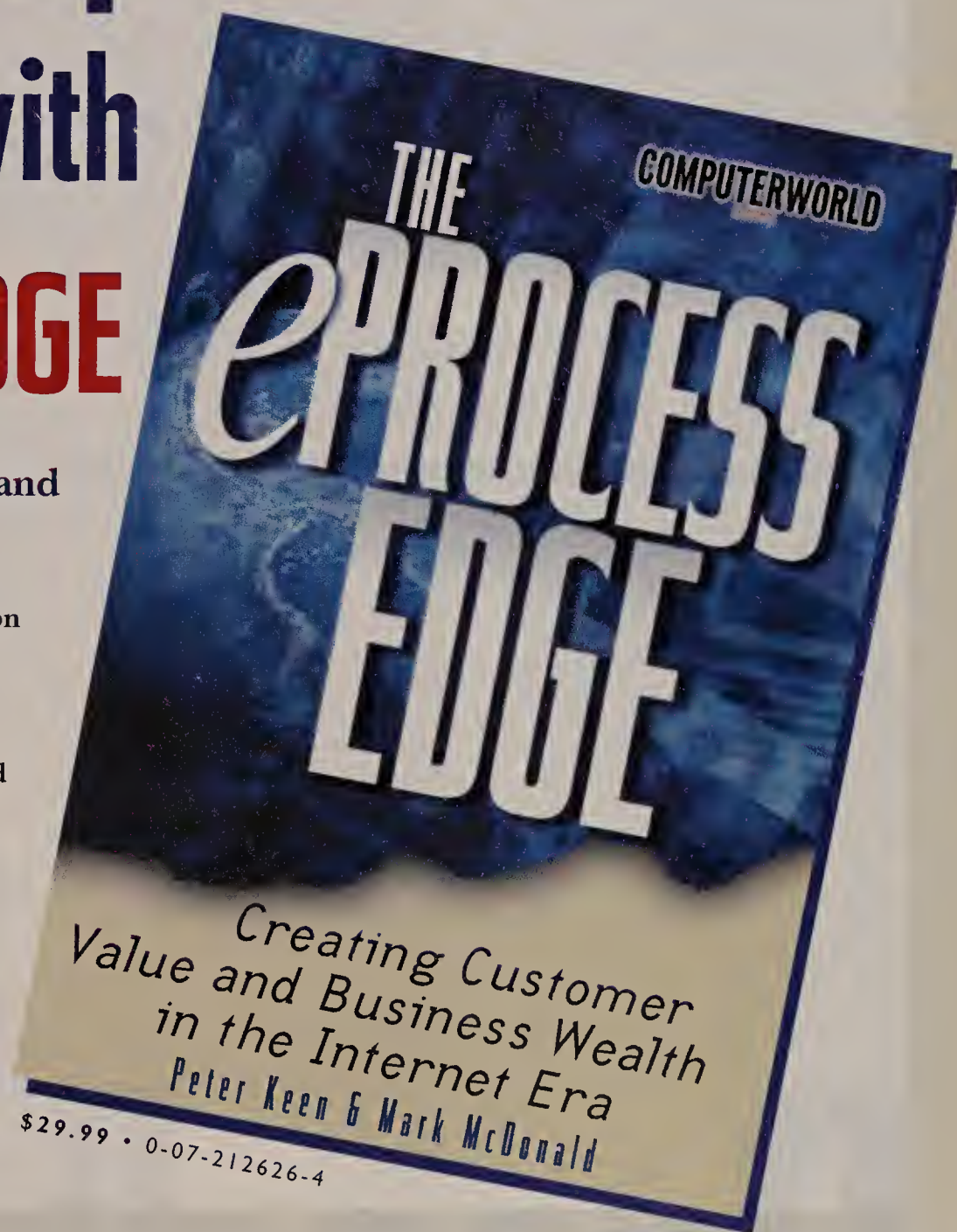
Gain the competitive advantage with The *e*PROCESS EDGE

Two thirds of all companies do not understand the gap between technology and process.

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—Venkat Srinivasan, CEO,
eCredit.com



Peter Keen advises leading-edge eCommerce companies. In addition, he has taught at Harvard, MIT, and Stanford Universities. In 1994, he was profiled by *Forbes* magazine as "the consultant from Paradise."

Mark McDonald is an associate partner and director of Andersen Consulting's Center for Process Excellence.

This book is part of the Computerworld Books for IT Leaders series. Available now at bookstores everywhere or call 1-800-262-4729.

To better expose IT workers to new projects and skills, some leading companies are rediscovering broadbanding — matching career paths to responsibilities, not titles. It's a system tailor-made for many IT staffs. *By Dawne Shand*

AT HOME DEPOT INC. in Atlanta, senior systems engineers with deep expertise in Unix may find themselves leading projects one month and playing a Java trainee role on their next endeavor. They aren't demoted, they don't take a pay cut, but they do acquire new skills. And that's what CIO Ron Griffin says he wants.

This career system is called "broadbanding," a human resources pay and compensation structure that's catching on in information technology departments. Broadbanding gives Griffin and his team the flexibility to staff employees on projects that will broaden their

technical and managerial skills. "It de-links title from responsibility" and encourages continuous learning, says Griffin.

Broadbanding got its start in the late 1980s as a cure for the complex systems of job grades that were in place at most large companies. Chris Ellis, a senior consultant at the Raleigh, N.C., office of Sibson & Co. (a division of Nextera Enterprises Inc. in Lexington, Mass.), says it wasn't uncommon to see companies manage 70 job grades and equally complex pay structures. For a specific grade, a salary could be increased by only 50% of the original baseline. For example, a networking specialist who started at \$20,000 could increase his salary to a maximum of

\$30,000 without being promoted.

For employees to make more money, companies handed out meaningless promotions or forced skilled experts to move into management. Human resources departments established intricate formulas for calculating pay scales and determining the level of new jobs.

Because companies feared overpaying their employees, human resources departments regularly surveyed the market to assure management that no one received too much money.

But the unwieldy grade system isn't suitable for today's IT. Job responsibilities need to correlate to the knowledge and expertise of employees, regardless of titles. "Competency-based pay and promotions systems [such as broadbanding] work particularly well for IT groups," says Ellis.

Broadbanding breaks the bond between a job title and an established set of responsibilities. It reduces the number of both pay scales and job levels and puts them in "bands." For example, a company decides which areas of expertise matter most, such as networking or systems architecture. Then it establishes bands that encompass a number of job titles and pay scales.

The result is that an employee can move across areas of expertise while continuing to earn more money. In fact, horizontal movement is encouraged. Having a breadth of skills becomes the criteria for promotion.

Home Depot has had the broadbanding system in place for 10 years. According to Paul Hoebeman, vice president of information systems, the struc-

ture has de-emphasized the importance of titles to the point where employees don't consider them as they change roles and responsibilities.

"When employees want to learn something new, they play to the level [on that project] that they're capable of," explains Hoebeman. But the broadbanding system doesn't come without its pitfalls. For those new to Home Depot, especially those in midcareer, the system does take some getting used to.

"There's a sense of a permanent set of job responsibilities often attached to job titles," says Hoebeman. In a broadbanding system, every project requires evolving expertise. You might one day manage a younger employee who could be teaching and leading you on the next project.

Dow Jones & Co. in New York is much newer to the broadbanding system. The company implemented broadbands for more than 600 non-managerial IT professionals in July. This month, it begins the process for 450 IT leaders. For Chief Technology Officer Bill Godfrey, the system underpins a strong human resources framework that includes performance management, compensation systems and attraction and retention strategies.

Although many companies benchmark salaries to protect against overpaying, Dow Jones will regularly survey the IT market to decide whether its employees are underpaid. The company has also established a joint employee and manager appeals committee to ensure that decisions are made fairly. Godfrey says the new system en-

Broadbanding The IT World



When employees want to learn something new, they play to the level [on that project] that they're capable of.

PAUL HOEBEMAN,
VICE PRESIDENT OF IS,
HOME DEPOT



ANN STATES

countered some initial resistance. Employees said they wondered if promotions would be harder to get and if they would be forced into other jobs within the company. For most employees, these fears were unfounded.

"Career growth can be horizontal," says Godfrey. "We just need to make it more manageable." Broadbanding should make it easier for employers and employees to talk about what they need for such things as training and skills, depending on which direction employees want to take their careers in. Godfrey points out, however, that

for upper management, broadbands have tougher implications. "There will be fewer opportunities to move up, and higher expectations," he says.

Broadbanding represents a way of building career momentum while encouraging learning. Godfrey notes that while financial results remain the single biggest measure of managerial success, IT leaders must also contend with an equally important goal: "We must encourage skill acquisition." ▸

Shand is a freelance writer in Arlington, Mass.

Matching Pay To Responsibility

On the surface, implementing broadbands sounds easy: Get rid of some management layers and increase the pay spectrum for those who remain. It isn't that simple.

Consultant Chris Ellis at Sibson & Co. points out some of the roadblocks he has seen companies run up against in his consulting work:

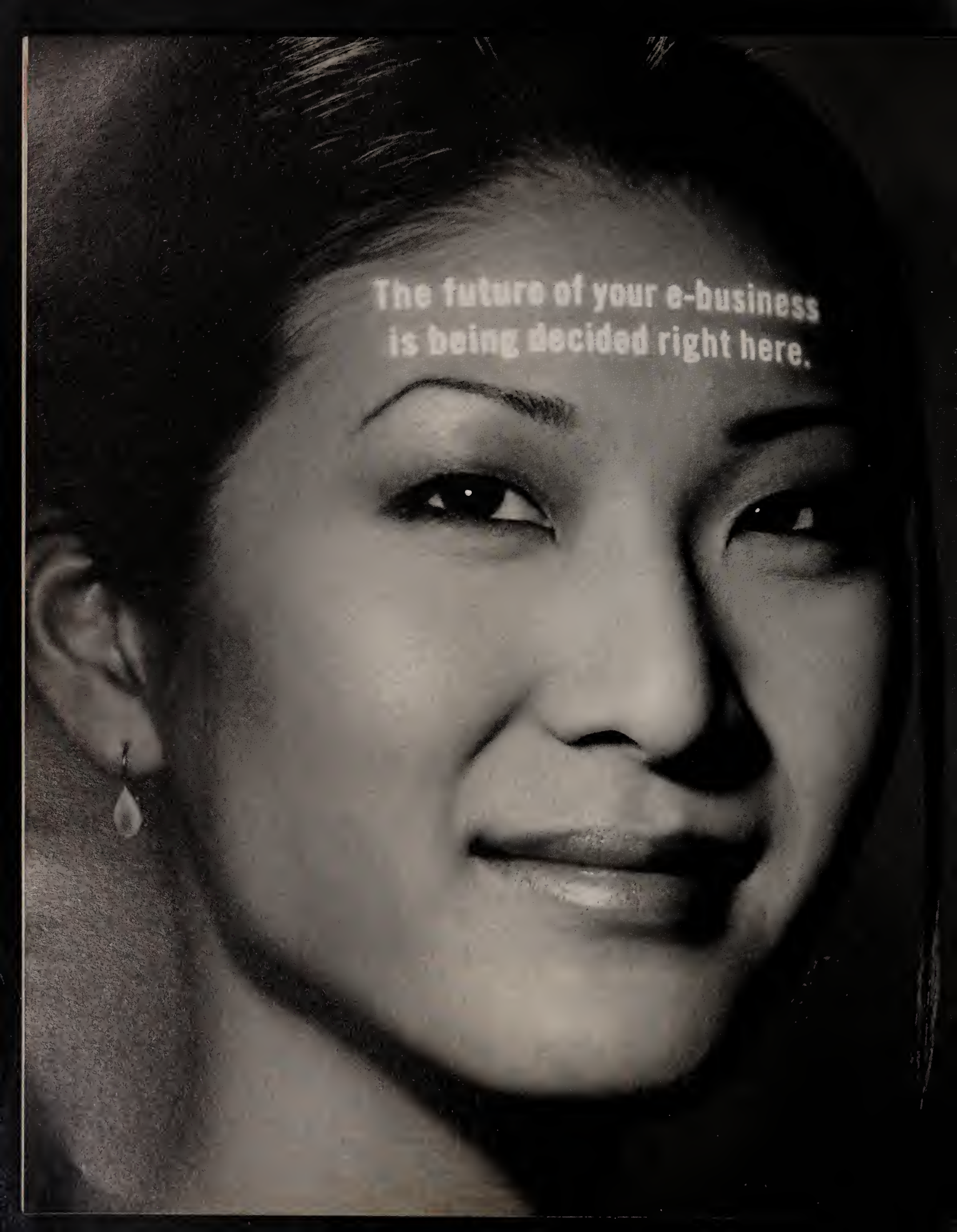
- Companies often forget that they must still define ways of awarding salary increases. If you remove the step-level promotions, what criteria will be used to judge progress?

- Career management in a broadbanding system isn't straightforward. Employees will have fewer significant promotions and must think about managing their careers differently. Employees need to evaluate their progress in terms of the skills, knowledge and competencies they're learning.

- Take care in how you benchmark salaries to the market. The point isn't to evaluate pay by the market's standards, but rather by the employee's abilities.

—Dawne Shand

ker



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BEING SEEN AT ALL THE RIGHT EVENTS

When it comes to conferences and trade shows, it can be hard for IT consultants to know which ones hold value for them. We asked some veteran consultants which ones they make a point of attending or avoiding. *By Leslie Goff*

YOUR MAILBOX FILLS UP every week with invitations to one conference after another. But your dollars are precious, and your time is limited. So how do you decide which events are worth your while as an independent information technology consultant?

"I must get a half a dozen fliers for conferences and trade shows in the mail each week," says Ric Goldman, a sole proprietor doing business as Spellbinder Systems Group in Palo Alto, Calif. "And most of them are either so generic or so narrow" that they're useless, he says. "[They're] just large, expensive gatherings of people talking about the same old things."

One way of sorting through the clutter is to avoid the madding crowd. Instead of attending a general trade show like Comdex or PC Expo, focus on conferences aimed specifically at consultants. Those are your best bet for sharing war stories with other consultants and picking up valuable advice about how to run your independent practice.

Then round out your yearly schedule with a key technology show that's relevant to your client base or your skill development goals. A vertical industry show may also be useful if you work in a specific niche.

Goldman and other consultants shared with *Computerworld* how they choose the conferences and trade shows that give them the most bang for their bucks. They also offered tips on how they allocate their time and budgets.

Consulting Conferences

The yearly confab of the St. Louis-based Independent Computer Consultants Association (ICCA) is far and away one of the most well-attended and useful events for independent IT consultants, past attendees say. Whether you're new to the 1099 life or an old pro, the conference is a must.

"I felt like I came away with friends, not just networks of people," says Sandra Story, who attended her first ICCA conference in Boston in June. "They turned out to be colleagues rather than competitors."

Now, if a client asks for a recommendation on a technology with which Story has no direct experience, it's no problem. "I have people who I could call up if I need someone with a specific area of expertise," Story says. "In the end, that makes me more valuable to my clients."

Story, who started consulting in February last year, also picked up tips on how to choose a lawyer who specializes in reviewing IT-related contracts. Another take-away was learning how to devise an effective marketing road map that forces you to do the things that usually fall to the bottom of your priority list.

Technology Trade Shows and National User Group Conferences

While general technology trade shows may not prove very useful to consultants, vertical technology shows and national user group conferences can be, Goldman says. They offer an inside look at a vendor's strategic direction, as well as up-to-the-minute news about new products. And such conferences can be a useful resource for addressing specific technology problems such as leveraging certain product features in a unique environment.

Choose technology trade shows and user group conferences based on the technologies you work with on a regular basis, Goldman advises. For example, he frequently works with sites that use Lotus Notes, so he attends the annual Lotusphere conference in Orlando whenever possible. And because he specializes

Tips and Tricks

Ric Goldman, sole proprietor of Spellbinder Systems Group; IT consultant Sandra Story; and John DiNunno, sole proprietor of Dynamic Techniques Inc. in Norcross, Ga., offer the following advice for getting the most out of conferences and trade shows:

- **To decide if a conference merits your time, review the previous year's proceedings on the conference's Web site.** Papers, presentations, transcripts of panel discussions and other materials are usually posted once an event is over. If it piques your interest, check out the current year's agenda.
- **Save money by signing up for the "early bird" registration.** Not only will it usually save you a percentage of the regular registration fee, but it will also increase the chances that you'll make attending the show a priority and schedule the time. In the event that you can't go, most conferences provide a prorated rebate on the fee if you cancel in advance.
- **Try to schedule a conference in conjunction with a vacation.** That way, you can deduct a percentage of your vacation costs (airfare, hotel or car rental) that otherwise would just be nondeductible personal expenses. Of course, if the sole purpose of your trip is to attend the conference, all of your business-travel-related expenses are deductible.
- **To cultivate a long-term relationship with a client, consider spending a day at an appropriate conference.** A show may not have a direct benefit for you but may offer some beneficial information for the client. Focus on finding solutions tailored to that particular client. If the conference is local, you may even be able to accomplish your goal in half a day.
- **Don't expect lead generation to happen overnight.** Usually, you meet someone at a conference who refers you to someone who needs advice, who in turn refers you to someone with a job. It may take several months, but the process all starts with the initial exposure from attending a conference.

in working on Hewlett-Packard Co. platforms, HP World — hosted by Interex, an international HP user group — is also part of his annual agenda.

Goldman especially appreciates conferences that have special interest groups for consultants, such as HP World. "Most vendors nowadays are realizing that consultants are extremely vital and useful resources for them as one of the best ways to get their products out into the marketplace," he explains.

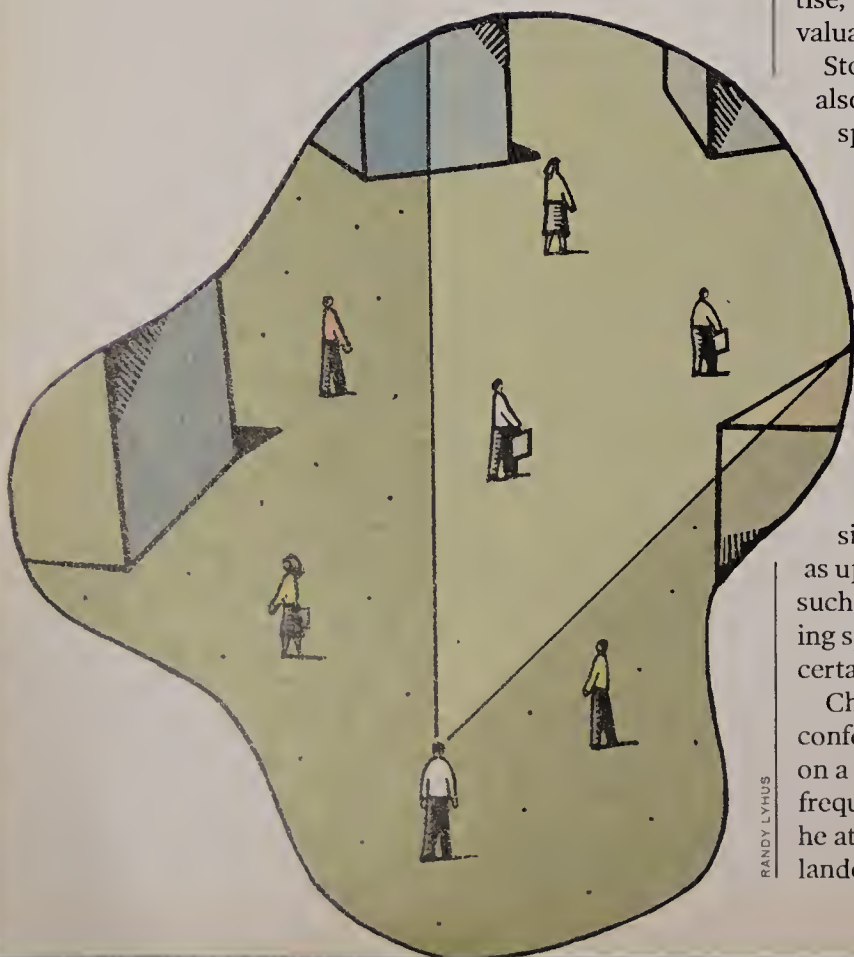
Industry Conferences

If you specialize in a particular niche, consider going to the leading trade shows in your area of expertise. Story, for example, belongs to the American Society for Quality because software quality assurance is a key part of her practice. The organization hosts a national conference locally, so she'll likely attend that next March.

"Not only would I meet other consultants, but I'd also meet other professionals in my local area," Story says. "That could be good for picking up new clients and learning the latest in the [quality] industry."

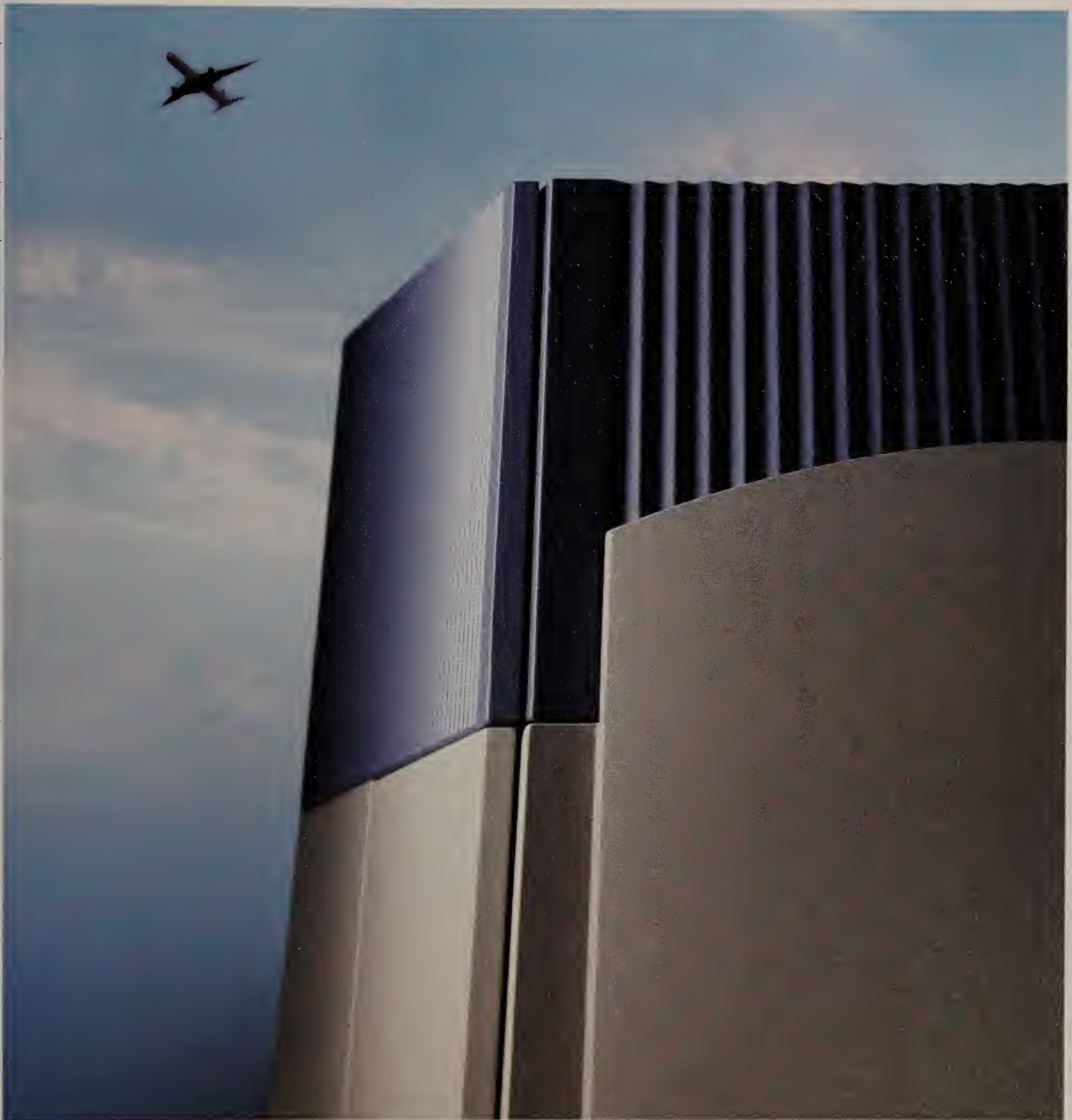
While industry shows aren't necessarily technology-oriented, they usually have at least one technology track, as well as vertical vendors on hand on the exhibit floor. And because they're well-attended by business executives in the field, the shows provide a great forum for meeting the movers and shakers who may have a hand in bringing consultants on board. Moreover, they offer a concentrated opportunity to identify new trends in your main field of interest. ■

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.



RANDY LYHUS

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Risk Management

DEFINITION:

Risk management is the process in which potential risks to a business are identified, analyzed and mitigated, along with the process of balancing the cost of protecting the company against a risk vs. the cost of exposure to that risk.

BY TAMARA WIEDER

THOUGH WE'VE been trying to perfect it for hundreds of years, it appears that the 1983 Tom Cruise film hit the nail on the head: Business is risky. And with the increasing dependency of businesses on technology to maintain and advance their organizations, the risks — and the stakes — are greater than ever.

This begs the question: How should organizations manage their risks?

Many Steps

According to analysts, effective risk management is a multistep process.

"Having a really thorough understanding of what you have is the most important step [in good risk management]," says Dennis Gaughan, an analyst at AMR Research Inc. in Boston. "In a lot of cases, the exposures that come up and bite you are because of things you weren't aware of. So really just understanding what all the different pieces are and how they all fit together is an important component of mitigating risk."

For instance, a company plans to build a data center, but there's a 90% chance that the project won't be completed on time.

The company then needs to look at the various costs associated with mitigating that risk. It may choose to spend more money to pay contractors who can get the job done faster. Or, if the risk of completing the

project late is deemed too great, the company may decide to push back the deadline. That decision would force the business to estimate potential lost revenue or productivity losses, as well as calculate the costs associated with extending the deadline for the project.

George Vrabel, senior vice president and senior director of technology audits at Charlotte, N.C.-based Bank of America Corp., agrees that self-awareness is key. "You have to recognize what the business is trying to do," he says. "I need to be able to look at that broad picture. I like to think I need to look at the trees and the forest at the same time."

But being self-aware is only the first step in effective risk management for companies. Another crucial component is planning for possible failures. It may sound simple, but analysts say that in the course of operating and maintaining a business, it's an often overlooked task.

"What a lot of people don't do is really plan for the inevitable failure and really take steps in understanding what it's going to take to recover from failure," says Gaughan.

Minimizing Downtime

From an information technology perspective, he says, risk management includes minimizing an organization's exposure to downtime or loss of service from its IT systems or processes.

From a business process standpoint, risk management is more about managing a "portfolio of systems and projects" in order to maximize financial returns on those investments and minimize the potential for conflicts and delays, Gaughan says.

Once a business has recognized what its potential risks are, it's equally important to evaluate how costly those risks

can be — and, therefore, how much time and money should be invested in mitigating those risks. That process — known as business impact analysis — is another crucial component of effective risk management for companies.

"A business impact analysis really helps define what a company's losses would be," says Chuck Wachter, manager of disaster recovery at Carlson Cos., a Minneapolis-based company focused on travel, hospitality and marketing. "If you were to have a power outage, even as short as 15 minutes, what are your financial impacts, what are your nonfinancial impacts, how are your customers affected, how is your industry image affected?"

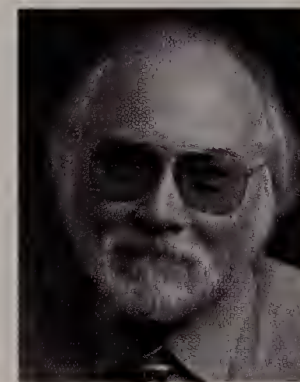
Cost Considerations

Once companies have determined what their risks are and what their losses might be, they must then decide whether or not to address each risk. To do so, companies consider the size of the risk and its consequences to the organization.

"You might choose to accept greater risk of failure because there's greater reward," says Frank Prince, an analyst at Forrester Research Inc. in Cambridge, Mass.

For example, a mail-order gift business evaluates the risks of launching a Web site in time for the holidays. Though there are many risks involved with the project — including the possibility that the Web site might not generate adequate sales volume and may result in a loss on the project investment — the potential rewards of operating an online business during the busy holiday shopping season might be great enough for the company to decide to go forward.

If, on the other hand, a particular risk is relatively unlikely but the potential cost to the company is great, then the organization might choose to address the issue in advance. For example, an Arizona-based IT service provider is unlikely to suffer power outages due to hurricanes or earthquakes. But since the company's financial



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You might choose to accept greater risk of failure because there's greater reward.

FRANK PRINCE, ANALYST,
FORRESTER RESEARCH INC.

losses or liability resulting from a power outage could be significant, it might decide to install a backup power system to protect itself.

In the end, many analysts and specialists agree that failing to address risk management is perhaps the greatest risk of all for a company.

"What you wind up doing is fighting a lot of fires," says Leonore Abordo, a product process manager at Redmond, Wash.-based AT&T Wireless Group. "With businesses, time is always of the essence, and it is not uncommon, in my observation, to see the time consciousness shortchange a lot of the planning."

"[People say,] 'Oh, we'll just figure it out as we go. We'll cross that bridge when we come to it' — not recognizing that there are multiple bridges, and some of them are already falling down," Abordo says. ▀

Wieder is a freelance writer in Boston. Contact her at twieder@bigfoot.com.

Risk Management Scenarios

■ A manufacturer evaluates the costs and resources required to launch an e-commerce unit, the risks of the unit failing and the loss on investment.

■ A bank considers issuing a credit card with a \$5,000 credit line to a new customer and the risk it takes that the customer may fail to pay off all or some of his charges.

■ A company invests \$5 million to develop and manage a software application to better automate its customer service operations. The business risks the project running late or over budget or failing to meet cost savings, customer loyalty or productivity targets.

■ An IT organization is interested in purchasing cutting-edge e-business software from a start-up but must evaluate the inherent risks of dealing with a small company that has limited financial wherewithal and questionable viability.

■ A small appliance retailer studies the risks of competing independently in a highly competitive market that's dominated by a handful of giant retailers and whether or not it makes more sense to allow itself to be acquired.



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Dear Career Adviser:

I'm in my mid-40s and, until a few years ago, was a pretty good graphical user interface and object-oriented database (OOD) specialist with some additional work in the use of Motif and the X Window System. In 1993, I

succumbed to my midlife crisis, going to school full-time to earn a Ph.D. in psychology.

I now realize I was happiest as a software engineer. I have some excellent grounding in OOD and object-oriented programming and have some up-to-date technical skills. I administer my own Linux server, developed my Web page and am learning Java, which is a lot like Ada. How do I explain my detour? — PSYCHED OUT

Dear Psyched:

Online retailers have learned that for each extra click users must perform, the chance of potential buyers leaving a site increases by 50%.

Many are alarmed by typical browser-to-buyer conversion ratios, which now hover around 2%. That makes your combined computer science and cognitive psychology background perfect for a technical field called human-factors engineering, says Elizabeth Charnock, CEO of Troba Inc., a San Francisco-based

start-up focusing on human-factors engineering tasks.

With your skill set, you could be in high demand to help e-commerce companies like Seattle-based Amazon.com Inc., Hewlett-Packard Co. and IBM or consultancies such as Chicago-based Andersen Consulting and Boston-based Bain & Co. that focus on design, usability and buyer-conversion issues.

For human-factors engineering job listings, contact BayCHI (www.baychi.org), the San Francisco Bay area chapter of the Association for Computing Machinery's Special Interest Group on Computer-Human Interaction. Expect to earn about \$50,000 to start and to get as much as \$130,000 as your expertise increases and you're pressed to bring immediate value in a fast-moving marketplace.

Dear Career Adviser:

I've been developing Web sites for about six years now, working mostly on the graphi-

cal end, using tools such as Flash, Photoshop and Director. I currently work at a Fortune 500 company, earning a salary of \$56,000, and a start-up has offered me \$80,000. With all the press about failed start-ups, I don't know whether to risk my stable job with its good benefits.

— QUEASY IN QUEENS

Dear Queasy:

Your quandary coincides with the biggest single month of dot-com job cuts, according to Chicago-based outplacement firm Challenger, Gray & Christmas Inc., which announced nearly 5,000 dot-com job cuts in its September data, for a total of 16,590 dot-com job cuts to date this year.

And you're right: In this job market, cash is the main lure firms use to attract new talent.

The key point to watch in this negotiation is the inflated cash this dot-com is using to attract its hires. To staff up, it could burn through all its money before addressing any of its primary business issues.

Therefore, be sure your new potential employer is either very well-funded or has an extraordinary business plan that will speedily bring in positive revenue. Otherwise, you could find yourself working at a company that's flat out of cash in short order.

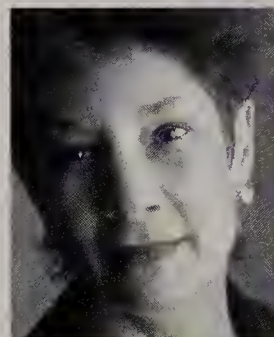
Dear Career Adviser:

I am one of the original employees at a dot-com and was CIO and senior vice president of operations and technology. We had a major project to

rewrite our existing application into a Java-/XML-based format.

After six months, several hundred thousand dollars and numerous promises, our outsourced developers failed to deliver. We are seeking to recover our costs and have engaged another firm. I lost my CIO title and took a hit

on my options. While I still report to the chief operating officer and have been told that the board still has confidence in me, I'm not feeling real secure



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

right now. Should I start looking for another job?

— SHAKY GROUND

Dear Shaky:

Politics aside, as a CIO, you must set expectations and then deliver. But if there are problems, says Paul M. Lemerise, president of P. M. Lemerise & Associates Inc., a CIO consultancy in Indian Wells, Calif., then part of your job is to provide an early-warning system to the entire board so that quick corrective action can be taken. This includes holding the vendor accountable.

Lemerise asks: Did you, as CIO, establish a track record of documenting the problems and engage the COO's participation in vendor review meetings? Is there documentation that would hold up in a suit against the vendor, and is your demotion documented in your personnel file?

Because your company has lost hundreds of thousands of dollars and your title is diminished, you should start looking elsewhere immediately, since your current management might just be buying time to conduct a search to replace you.

Once you have a firm offer in hand and give notice, management's reaction will tell you how they really feel. Most important, never again sit on poor vendor performance without taking immediate action. ▀

BRIEFS

Armey Calls for End to FTC Rules

In an exclusive column on *Computerworld.com*'s E-Commerce Community page, House Majority Leader Dick Armey (R-Texas) wrote that the time may have come to discard the Federal Trade Commission's "fair practices" guidelines for e-commerce Web sites. Armey said he came to that conclusion after a General Accounting Office survey showed that more than 90% of federal Web sites can't meet those standards. While White House officials have said the GAO report was an unfair comparison, Armey said the federal Web sites' failures are

an indication that the federal government shouldn't be dictating policy to anyone. To read the complete column, visit www.computerworld.com/ecommerce.

ICANN Reviewing New Top-Level Domains

Nearly 70 companies and organizations have suggested more than 200 top-level domains to the Internet Corporation for Assigned Names and Numbers, which is considering expanding domains beyond the familiar .com, .net and .org. Among the suggestions: Diebold Inc. in North Canton, Ohio, has proposed .cash, .global and .secure. Novell Inc. is pitching .dir. SRI International in Menlo Park, Calif., has proposed .geo. Finland-

based Nokia Corp.'s proposal includes .own and .now. Some of the other proposals include .jazz, .software, .wap, .air, .biz, .inc, .kids and .news. The proposals, released last week, are detailed at www.icann.org.

Space.com Cuts Jobs

Space.com Inc., an Internet multimedia company focusing on space-related exploration and science news, said it has laid off 22 of its 108 employees. The affected employees were offered severance packages and outplacement assistance, according to Chairman and CEO Lou Dobbs. The New York-based company has bought several space-related Web sites, including SpaceWatch.com and Explorezone.com, in the past year.

GM Inks Deal With BlackVoices.com

General Motors Corp. in Detroit last week announced a multimillion-dollar marketing deal with Chicago-based BlackVoices.com Inc., a Web site focused on African-American news. The exclusive deal will allow GM to advertise on the site and display a link to the automaker's GM-BuyPower.com consumer Web site.

Warning: Web Polls May Be Misleading

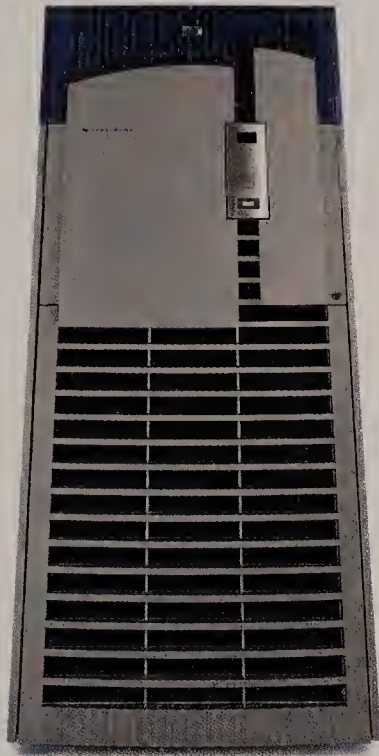
With the presidential elections fast approaching, the American Association for Public Opinion Research in Ann Arbor, Mich., recently sent out

a warning that many Web-based surveys aren't effective at capturing true public opinion. Often, data from online polls is flawed because, unlike more scientific polls, online polls don't represent a cross-sample of the population and responses aren't obtained through random sampling, the group said.

Lucent Hires Former Hewlett-Packard CEO

John Young, a former president and CEO of Hewlett-Packard Co., has been named chairman of the newly spun-off microelectronics unit at Lucent Technologies Inc. in Murray Hill, N.J.

Young, 68, led HP from 1978 to 1992 and has served on Lucent's board of directors since 1996.



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Feature Article
**Is wireless data
ready for
prime time?**

The past decade has seen some false starts for wireless messaging and other data services. Even as U.S. businesspeople turned to cell phones as a critical business tool, the practice of using those phones for more than just voice has stumbled in this country.

But now, several converging trends persuasively predict an explosion in the demand for wireless data communication services. The fact is more and more end users are spending more time away from the office. They demand seamless Internet access, and — spoiled by T1 connections — they demand high speed.

The Boston-based Yankee Group estimates that the number of North American mobile data subscribers will more than triple between 1999 and 2002 — growing from 3.4 million to 10.9 million. And Framingham, Mass.-based International Data Corp. estimates that while today, 15% of the U.S.' 64 million mobile phone customers use their devices for data, the number will leap to 70% (of 108 million users) by 2002.

For full story visit:

www.computerworld.com/worldcom

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TECHNOLOGY

NEW APPLE OS BLOSSOMS

With a host of Unix-based internals, the new Mac OS X handles backward application compatibility with a number of application programming interfaces, somewhat different configuration capabilities and increased security. The operating system shows impressive stability and a lovely interface but quite variable performance. **72**

HACK OF THE MONTH

Internet service providers and businesses in general are instituting hard-line policies in response to viruses, Trojan horses and other security threats. *Computerworld* columnist Deborah Radcliff cautions that companies can overreact to the risk, giving up valuable productivity tools in the name of security. **73**

SECURITY JOURNAL

What good is antivirus software if all users don't receive timely virus updates? Not very, Jude finds, as workstation logs reveal that only 40% of users are up-to-date. **76**

FUTURE WATCH

Haptic technology adds the sensation of touch to computer peripherals, offering greater feedback and new potential for training and simulation applications. For training,

medicine and entertainment, its potential is vast. **78**

PUTTING DATA ON THE MAP

Combining data from disparate sources into a single map is hard, but an industry group aims to make it simpler. If OpenGIS succeeds in its effort to create a single Web Mapping Server Specification, a user could search for geospatial data over the Web, much as one might do a search on a keyword. **82**

QUICKSTUDY

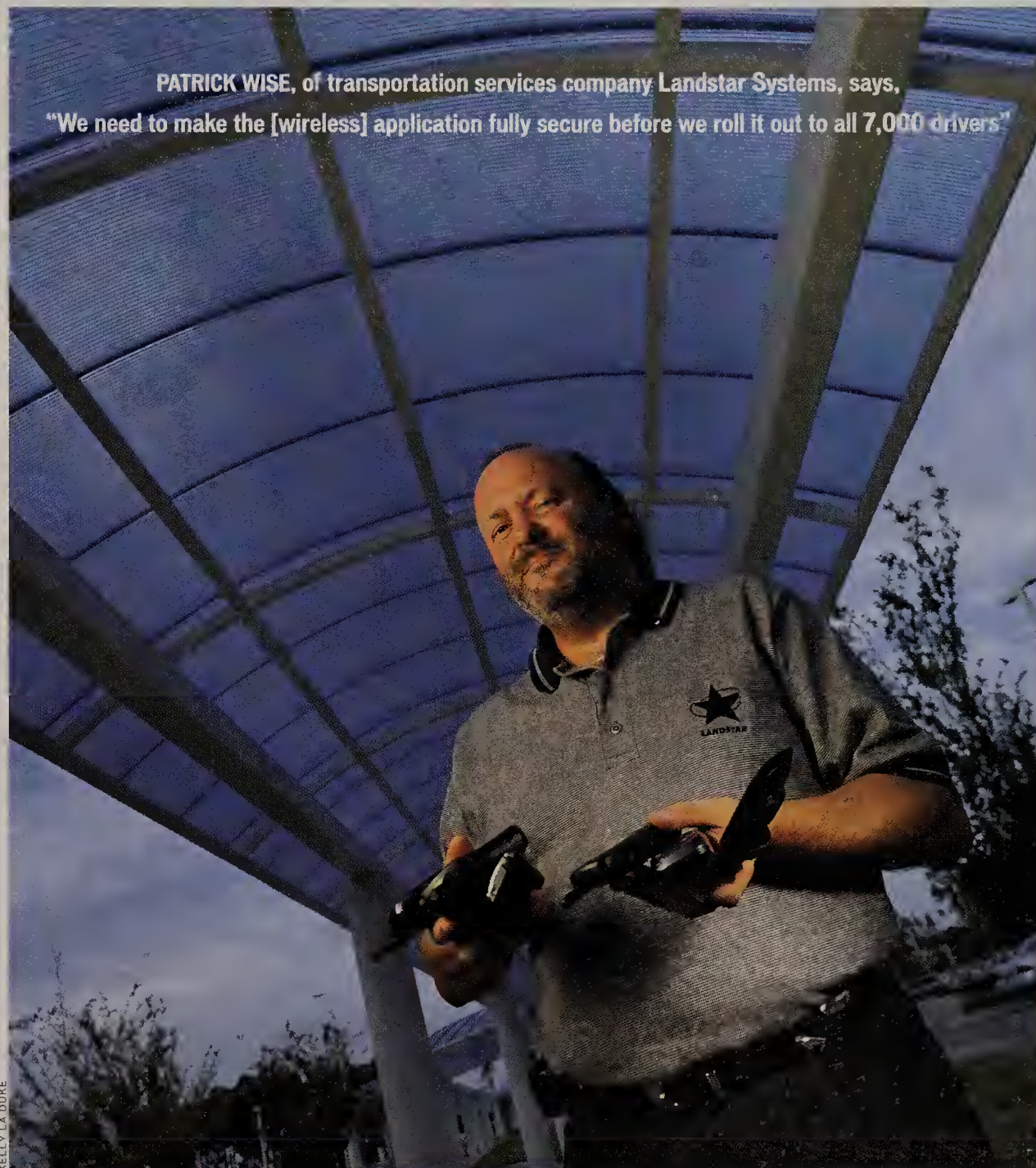
Middleware is the software that connects — or glues together — applications and users, allowing them to communicate with one another across a network. Find out more in this week's tutorial. **84**

EMERGING COMPANIES

Security administrators need a single place to see all their security data. Start-up e-Security provides such information more easily and less expensively than big-league management tools, say company officials, and that's what they're banking on for the future. **86**

TRENDSETTERS

Increasingly, younger — much younger — IT professionals are finding their way to the very top of organizations. This trend is creating some challenging cultural issues for managers and reports alike. **88**



PATRICK WISE, of transportation services company Landstar Systems, says, "We need to make the [wireless] application fully secure before we roll it out to all 7,000 drivers."

GEARING UP FOR HANDHELDS

THE USE OF WIRELESS AND MOBILE TECHNOLOGIES is exploding, but companies say they're finding that they need to make preparations for the handheld revolution. Worries about security, speed, coverage and the maturity of the technology are legitimate, say experts, but there are technologies and strategies to deal with them.

80

BRIEFS

Red Hat Unveils
Linux Server App Pack

Red Hat Inc. has announced the release of its Red Hat Linux 7 server software package, with enhanced security, increased 3-D support and optimization for high-end Intel processors. The Durham, N.C.-based company is selling the Standard Edition software for \$29.95, the Deluxe Edition for \$79.95 and the Professional Edition for \$179.95. The package is preset to be compatible after the arrival of the pending Version 2.4 kernel.

BMC Releases Patrol
SRM Software

Houston-based BMC Software Inc. has rolled out products for its Patrol line of storage management software. The Patrol Storage Resource Manager (SRM), formerly Resolve Storage Resource Manager, offers reports identifying the 10 largest files, duplicate files and older files. Patrol SRM for Windows NT and Unix is available at www.bmc.com/patrolsrm.

Patrol for Network Appliance Filers identifies application problems caused by storage events; monitors the performance, availability and reliability of network-attached storage devices; and offers a color-coded status display. Patrol Recovery for Oracle increases the speed of moving data to the backup storage device and availability of LAN resources for application-related traffic. Pricing begins at \$675.

Storability Announces
Remote Storage

Storability Inc. in Southboro, Mass., has announced its line of remote management storage services: AssuredAssessment, AssuredOperation, AssuredVolume and AssuredRemote. AssuredAssessment assesses all facets of a client's information technology organization; AssuredOperation provides real-time monitoring for performance, capacity and uptime; AssuredVolume allows remote management of primary storage needs; and AssuredRestore offers backup and restore services remotely. Prices depend on configuration. www.storability.com

Under the Hood
With Mac OS X

New Unix-based operating system's beta shows reliability but erratic performance

BY TOM THOMPSON

IN THE MIDDLE OF LAST month, Apple Computer Inc. released a public beta of its next-generation operating system, Mac OS X. (The "X" is read as "ten"; it will be the successor to the current implementation, Mac OS 9.) The goal is to provide for the Macintosh platform all the modern bells and whistles, such as preemptive multitasking, memory protection, virtual memory and task scheduling.

But the presence of these much-desired features isn't the same thing as having them function reliably; just ask any Windows 98 user. Macintosh users have had to weather many missteps while waiting for an operating system with these features, so users have high expectations.

So, does the Mac OS X public beta deliver? The CD costs \$29.95 and isn't available for download. You need a PowerPC-based Macintosh (preferably with a G3 or G4 processor), 128MB of RAM and about 1.5GB of disk space. I tested it on two systems, a Mac PowerBook (a 250-MHz G3 with 160MB of RAM and a 5GB disk partition) and a Power Macintosh tower (a 400-MHz G4 with 128MB of RAM and an 8GB disk partition). Installation was simple, taking more than an hour on the PowerBook but only 15 minutes on the tower machine.

Performance: Up and Down

On the PowerBook, Mac OS X behaved erratically; it was sluggish at times and decently quick at others, and boot times varied between two and four minutes — apparently due to a "system tuning" stage during the boot process. At times, the Mac OS X Finder didn't recognize double clicks on the PowerBook's trackpad, and the system slowed to a crawl. It became noticeably more respon-

sive after I added an external mouse and keyboard. Then, I could run the "Classic" Macintosh environment (in essence, a version of OS 9) and actually edit a Microsoft Word 98 document. Overall, ported applications and the Classic environment executed tolerably well, but there's plenty of room for improvement.

Mac OS X ran much better on the G4 system, with boot times of about a minute and a half. The Classic environment ran just slightly slower than the same machine running Mac OS 9 alone. A port of Microsoft Internet Explorer 5.0 ran fine on the G4 but not on the PowerBook. There, I had to use Seattle-based The Omni Group's OmniWeb browser to do any surfing at all.

Some people are pleased with Mac OS X's performance, even on a 233-MHz iMac, while others with more capable G4 systems report sluggish performance. This tells me that the boot and system-tuning stages need more work — this is beta software, after all.

Impressive Stability

The new Aqua interface is very attractive, with anti-alias graphics and translucent controls that are restful to the eye. However, good looks aren't enough. What will win over users is the extremely stable kernel that's almost impossible to kill. More than once on the PowerBook, the Classic environment crashed into the debugger. But when I clicked outside of the debugger window, the Mac OS X Finder appeared and I could hit the magic Command-Option-Escape key combination. A Task Manager window (like the one in Windows NT) lists running applications. Pick the Classic environment and kill it, and the debugger window disappears, leaving Mac OS X humming along. Very impressive.

Because Mac OS X is built

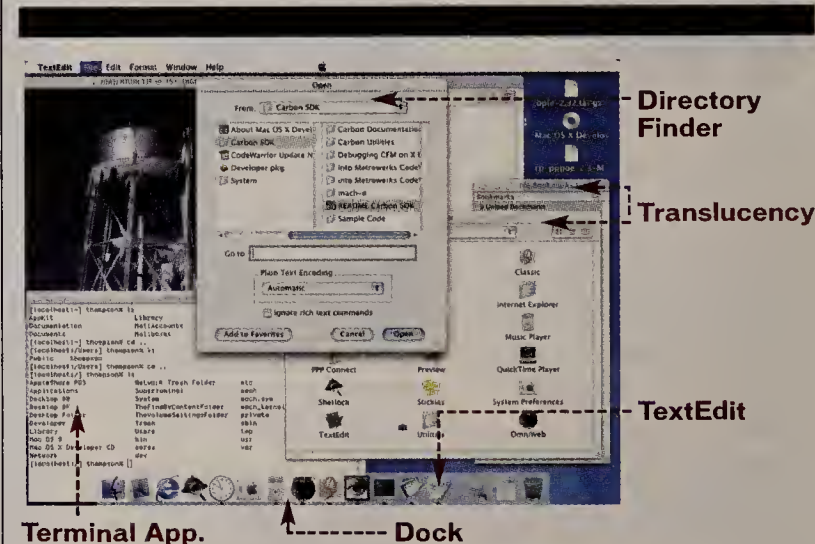
on a Unix kernel, it faces some of the same security problems as Unix and Linux. However, Mac OS X does start with some reasonable precautions: For example, the password you enter for the first user account becomes the password of the root account as well, thereby closing the door on hackers who gain access to systems by using a standard installation password. Also, file transfer protocol and remote Telnet services are switched off by default.

In this beta release, certain features of Mac OS X are hid-

adjust. A Terminal application gives command-line access to various line-oriented Unix utility programs. Listing directories with Terminal reveals a slew of standard Unix directories (such as /etc) and files that you don't normally see. Mac OS X users and corporate help desks will have to learn how to troubleshoot system problems all over again — but the system's stability means that IT managers will have to troubleshoot less often.

Goodbye, Hot Swap

One feature that Mac OS X sorely lacks is the ability to hot-plug devices such as CD or CD-R modules into the PowerBook's bays. Under OS 9, I can switch easily among 802.11b wireless, an RJ-45 Ethernet connection and PPP dial-up networking protocols without



THIS SCREEN CAPTURE shows off the new Aqua graphical interface of Mac OS X running Adobe Photoshop, along with a dialog box for TextEdit. The first window shows two views of the same directory — one from the Finder, and one from the Terminal application. The other window shows a dialog box for TextEdit, showing off the Aqua interface. At the bottom of the screen is the dock. Also, you can see the translucency capabilities of the Quartz interface with some of the windows.

den from view, typically because they're in a rough state. For example, the AirPort wireless service isn't available. However, you can turn the card on by creating a properly named directory in the Extensions directory, dropping an XML file into it and rebooting. However, the transmissions aren't encrypted, which means you are broadcasting your source code file transfers and surfing practices.

Most system configuration panels are similar to those in Mac OS 9, but the directory arrangement differs. If you know Linux or Unix, the arrangement makes sense, but veteran Mac users will need to

restarting most applications, much less the computer. Under Mac OS X, such hardware changes require a reboot. Worse, even changing network protocol stacks requires a reboot. While I expect that I will adjust to most of the changes of the new operating system, the loss of hot-plugging will be painful. ▶

Thompson is a training specialist at Metrowerks Inc. You can reach him at thompson@metrowerks.com.

MORE ONLINE

For more on Mac OS X architecture and programming interfaces, visit our Web site: www.computerworld.com/more

DEBORAH RADCLIFF/HACK OF THE MONTH

Don't overreact

LAST WEEK, Yetzer-Ra, a hacker source and Windows NT administrator, telephoned me. He was bent out of shape because his Inter-

net service provider (ISP), Seattle-based Speakeasy Network, e-mailed its 25,000 members to inform them of an impending scan of Port 7597 for QAZ Trojan horse activity. Customers who didn't eradicate any Trojan horses within 48 hours would be subject to suspension of service until "you assure us that you have cleaned your machine," the memo said.

QAZ is the latest hidden executable program that propagates through Microsoft Corp.'s network file sharing.

It's not just ISPs that are taking hard-nosed stances

against security threats. Businesses are also dropping what are, in some cases, valuable productivity tools because of security concerns. But reactive policies like these are a bad idea. Even though Speakeasy's memo included help links, Yetzer says the provider's technically illiterate members would still struggle to repair their own machines.

If such policies spread to other ISPs, the result could be the exclusion of everyone except the technically literate, leaving online retailers out in an empty marketplace.

"You could almost view it as

a kind of dress code," says Todd Kaufmann, a principal security architect at eBuilt Inc., a Web development company in Irvine, Calif. "They're saying, 'We won't give you access to our network unless you show a certain amount of hygiene.'"

And what happens when companies cancel collaborative programs like instant messaging and file sharing?

Charles Biggs, vice president of systems engineering at NetGuard Inc., a firewall vendor in Wakefield, Mass., says he's seen clients disconnect instant messaging and file sharing at the expense of productivity.

"They just turn [instant messaging] off, even if they need it," Biggs

says. "I wouldn't. My field-support guys couldn't work without it."

Mitchell Hryckowian, an infrastructure manager at Interliant Inc., an application service provider in Purchase, N.Y., argues that dropping insecure applications and exerting customer security controls are inevitable reactions to an insecure Internet.

But there's a more reasonable solution. Before doing

anything reactive, take the time to analyze your business needs. If the service in question is integral to the company's productivity, then keep it. Just minimize your risk by staying up-to-date on versions and patches, says Yetzer. Also, watch for new vulnerabilities by checking

Bugtraq mailing lists and Web sites, keep your security software up-to-date and password-encrypt file sharing and instant messaging.

ISPs should also proceed with caution. If a provider decides to take a hard line, then it better have a strong technical team to back up its customers, as Speakeasy did.

Speakeasy started with an education campaign about two months ago, informing members of the QAZ virus and describing the Trojan horse in plain, easy-to-understand language, explains Riley Bruington Hassell, a member of the company's security team. The final e-mail linked to directions for turning off and encoding file sharing, and it included a number for telephone support.

Aside from Yetzer, Speakeasy experienced no customer fallout, according to Bruington Hassell. ▀



DEBORAH RADCLIFF is a Computerworld feature writer. Contact her at deborah_radcliff@computerworld.com.

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Windows 2000 ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

Online this week:

POINT OF VIEW

The TaskSmart N-Series: Compaq and Microsoft redefining enterprise storage

Based on Microsoft Windows 2000 the new TaskSmart N-Series Network Attached Storage (NAS) appliance from Compaq makes it easy to deploy and manage advanced file storage.

www.windows2000advantage.com/pov/09-29-00_tasksmart.asp/300

TECH EDGE

Two Microsoft packages achieve Unix functionality and interoperability with Windows 2000

Microsoft offers two powerful Unix interoperability solutions. The first is Services for Unix (version 2.0). The second is Microsoft Interix 2.2.

www.windows2000advantage.com/tech_edge/09-18-00_unix.asp/300

Q & A

Jeri L. Callaway leads Compaq's efforts in the commercial PC arena

Callaway is vice president of product development for Compaq's Commercial PC Group. She leads the engineering team responsible for technology planning and more.

www.windows2000advantage.com/qa/09-13-00_callaway.asp/300

COLUMNS

Ready, Set, Migrate! Let the 2000 Games Begin

Olivier J. Thierry believes there is a parallel between the preparation required to compete in the 2000 Olympic games and the preparation required for the migration and deployment of Microsoft Windows 2000.

www.windows2000advantage.com/columns/09-11-00_migrate.asp/300

CASE STUDIES

Windows 2000 fever can be infectious. Just ask Datareturn.com

After testing Microsoft Windows 2000 Advanced Server as part of Microsoft's Joint Development Program, Datareturn.com lost no time migrating its own Web site and customers' shared Web servers.

www.windows2000advantage.com/case_studies/09-18-00_infectious.asp/300

NEWS >

Datacenter, .NET launches reveal deepening Compaq-Microsoft relationship

In what Microsoft CEO Steve Ballmer referred to as "the broadest launch in Microsoft's history," Microsoft introduced Windows 2000 Datacenter Server and its enterprise-enabling line of .NET servers, while making it clear that Microsoft and Compaq are continuing to work closely together on a variety of mission-critical, enterprise initiatives. These include Compaq's newly unveiled Integration2000 program for developing and promoting XML-centric services and solutions based on Microsoft BizTalk Server 2000.

For the full story, visit: www.windows2000advantage.com/momentum/09-27-00_data_cntr.asp/300

NEWS >

Compaq announced its certified Data Center solutions for Microsoft Windows 2000 Datacenter Server

Compaq weighed in with a host of significant announcements at Microsoft's Windows 2000 Datacenter Server and .NET launch. They include certified Data Center solutions for Datacenter Server, Integration2000, a new cluster configuration of TerraServer.Net, a strategic alliance with Commerce One and an alliance with Andersen Consulting.

For the full story, visit: www.windows2000advantage.com/momentum/09-27-00_data_cntr.asp#compaq/300

NEWS >

Microsoft's .NET Enterprise Server Line

The Microsoft .NET Enterprise servers consists of the eight servers that will help IT professionals integrate, manage and Web-enable their enterprises. These servers will run on Microsoft Windows 2000 Server family which include, Windows 2000 Server, Windows 2000 Advanced Server and Windows 2000 Datacenter Server.

For the full story, visit: www.windows2000advantage.com/momentum/09-27-00_data_cntr.asp#servers/300

www.Windows2000Advantage.com/300

MOMENTUM SERIES >

Compaq bolsters commercial desktop line with Deskpro EX; adds "S" models to Deskpro, Armada lines

Compaq has completed the redesign and simplification of its commercial desktop line with the introduction of the Compaq Deskpro EX. This new line of competitively priced products was designed for customers who value the best performance for the price and want to take advantage of the newest technology as it becomes available. Compaq will also expand the Deskpro commercial desktop line and the Armada commercial notebook line to include new "S" edition models – Deskpro EXS, Armada E500S and Armada 100S – designed for the small and growing business markets.

For full story, visit: www.windows2000advantage.com/momentum/09-18-00_deskpro.asp/300

2000 GENERATION >

Upgraded SQL Server 2000 facilitates Web-based applications, offers increased reliability and scalability

With the upcoming release of SQL Server 2000, Microsoft has an opportunity to play in the major leagues when it comes to enterprise-grade database servers. The new version – scheduled to ship this fall – has received a series of major improvements in four areas: Web applications, reliability, scalability and data analysis.

For the full story, visit: www.windows2000advantage.com/2000gen/08-21-00_sql.asp/300

QUOTE OF THE WEEK >

"We have found that Windows 2000 reliability is far superior to Microsoft's previous OS releases. Customers are continually telling us how thrilled they are that they no longer have to do as much rebooting and hands-on maintenance with Windows 2000. They very quickly feel the value of how stable and easy-to-use the system is."

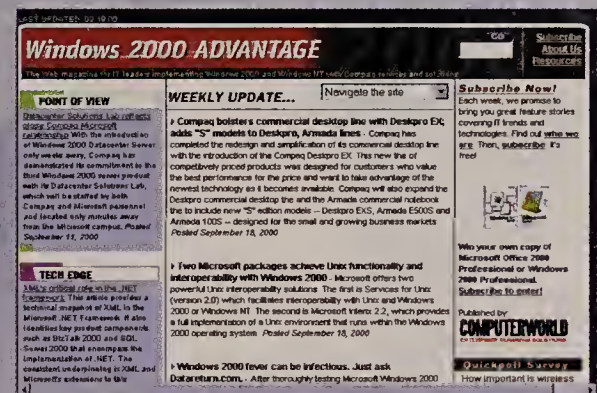
— Rand Morimoto, President,
Convergent Computing

What is Windows 2000 Advantage?

The mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

Windows 2000 Advantage is a Web-only magazine because that lets us bring you, the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

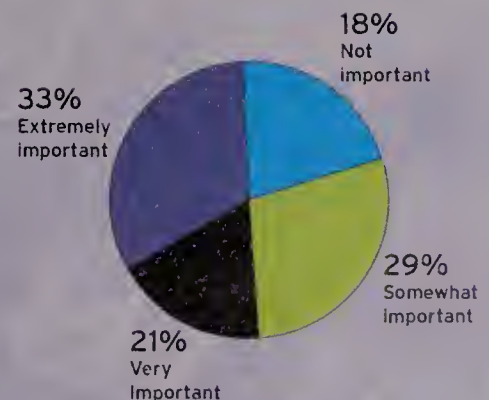
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QUICKPOLL >

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Antivirus Tool Solves Only Half the Problem

Delays in implementing virus updates leave 60% of Jude's company's workstations underprotected

BACK TO BASICS this week: antivirus again. This project has been one of my main priorities for the past three months, and we're finally beginning to see results. Unfortunately, not all of them are good results.

We have antivirus scanners on all of our servers and desktops. We update them regularly, but we don't manage the software properly and it's gotten out of hand.

The Status Quo

Symantec Corp.'s Norton AntiVirus 5 is installed on our desktops, file servers and internal mail servers, and we have Trend Micro Inc.'s InterScan VirusWall installed on our external (Internet) mail gateway.

Whenever a user opens, moves, reads, copies or does anything to a file, the Norton AntiVirus Auto-Protect mechanism on his PC scans it for known viruses. Every e-mail going through any of our mail servers has its attachments scanned by that mail server's scanner. All servers are automatically scanned overnight for infected files.

Antivirus scanners are good only if they're kept up-to-date. So every week, we download Symantec's new version of virus definitions to our testing area and distribute it to 30 or so test PCs and servers. If we have no problems with the test machines for 24 hours, we move the upgrade into the production environment. Our desktop support staff then pushes the upgrades out to each of the PCs around the company.

We still got hit by viruses — probably. I say “probably” because no one really keeps an eye on virus infections unless they get out of hand, and no records are kept. As a result, we would know of virus infections on a workstation only if the user called the help desk to report it.

The eagle-eyed among you may have noticed a few potential holes in this solution. We don't have anything scan-

ning Internet downloads — so Web-based e-mail, for example, doesn't get scanned until it hits the user's desktop.

The process also depends on support staff pushing upgrades out manually — and these guys are busy and often get sidetracked onto more urgent problems. In truth, the very fact that there's human involvement in the process means that it's slow and unreliable.

Ever since I joined the company, I've been keeping records of how up-to-date our PC virus scanners are. Each Monday morning, I run a script that scans the Windows Registry of every PC connected to the LAN at the time and checks for the value of one particular key (HKEY_LOCAL_MACHINE\Software\Symantec\Shared Defs\NAVNT_50_API, if you're curious) that tells me what version of the virus definitions each PC is using. So far, in our best week, we had 40% of the company's PCs up-to-date, but it's usually 30% or below.

Our servers are much more reliably up-to-date — the update process is almost completely automated — so any virus infection that gets in should run up against the servers soon enough.

But we're placing a lot of reliance on the servers, and some viruses could spread quite a way or do a lot of damage without touching them.

Four-Step Plan

So I'm now putting in a four-point solution as follows:

Step 1: Secure the perimeter. Make sure that data and applications get scanned for viruses before they reach the PCs or the servers.

Step 2: Make sure the workstations are kept up-to-date in case something does get past the perimeter.

Step 3: Develop an emergency procedure to update all the workstations and servers in a hurry — just in case my company gets hit by something

particularly new and nasty.

Step 4: Get some management and reporting procedures in place so we get enough warning of infections to stop them before they spread too far.

Progress Report

Progress is slow. I know how to implement each of these steps, but everything has to be tested to destruction before it can be rolled out to users. No step is quite as simple as it seems.

As our external mail gateway is already quite well protected, Step 1 consists mostly of installing a content-checking proxy that scans HTTP and file transfer protocol (FTP) downloads for viruses. Our head office has already bought a copy of InterScan VirusWall to do just that, but we've got to get around some of the limitations.

Our Web engineering team claims that it will slow down Internet access and cause some browsers to go to timeout while waiting for downloads to be scanned for viruses. No one's quite sure what effect it will have on automatic FTP scripts.

We have to install a new Web proxy server with VirusWall so we can test all the performance implications, and that takes a lot of time and resources from a Web engineering team already working flat out to implement an e-commerce project. Hopefully, we'll have that up in a month or so.

As for Step 2, our existing workstation-update procedure was born out of mistrust of Norton Antivirus that started when one antivirus update caused some PCs to crash. Although this happened at least a year ago, such mistrust takes a long time to fade. In fact, we've never had a virus infection that did as much damage as that one update, so you can understand why people are nervous.

That mistrust meant that the desktop support staff insisted on being able to control the update procedure so that they could back it out immediately if they encountered problems. I'm trying to replace this with an automatic procedure — Norton's built-in scheduled update procedure, in fact — so that each workstation checks a central server for updates on a regular basis.

So far, we've piloted the procedure on 10 workstations without a hitch; now we're piloting it on 100 workstations. If we still have no problems in a couple of



Security Manager's Journal

THISWEEK'S GLOSSARY

Virus definitions: Most antivirus software works by looking for known, defined viruses that have already been found and dissected by antivirus companies. Virus-scanning software uses definition files and updates to detect new viruses.

LINKS:

www.symantec.com: The source for information on Cupertino, Calif.-based Symantec Corp.'s Norton AntiVirus 5 software.

www.antivirus.com: Cupertino, Calif.-based Trend Micro Inc.'s Web site contains information on InterScan VirusWall, which detects and removes viruses found in SMTP, HTTP and FTP gateway traffic. It also offers a wide variety of antivirus programs for e-mail, desktop software and other applications.

www.iss.net: Internet Security Systems' home page includes information on RealSecure security management tools and SafeSuite scanning software.

weeks, we'll roll it out to all users. But in the meantime, we have to try to scale the solution up, and Norton doesn't seem very scalable.

The existing program lets us schedule updates daily or hourly; we want something in between. It also doesn't allow us to randomize the time at which each PC checks for updates, so we're faced with the possibility of every PC across the company trying to open an FTP session to the same server at the same time. That isn't going to be easy on the server.

I've managed to palm Step 3 off on our head office, and Step 4 is relatively easy. We have hit problems trying to get our PCs to report details of virus infections into a central database. I still treasure the response from Symantec's support line when we asked for help with this. We asked how to export data from the antivirus scanner's log files into a database. Its response? “Open the log file, then select File/Print.”

I don't have a large enough budget to hire dedicated typists to transcribe log entries into a database, but I have a feeling that our intrusion detection software, RealSecure from Internet Security Systems Inc. in Atlanta, may be able to do the job for us.

I just hope we don't get hit by the next headline-grabbing virus before I have a chance to sort this one out. ▀



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The Sensual Computer: High Touch, High-Tech

SENSABLE TECHNOLOGIES'
Phantom lets users physically sense the texture and shape of an on-screen object



Add touch to the list of data types your computer can output. For training, medicine and entertainment, it's a dynamite capability. By Russell Kay

HOW DOES your computer feel today? No, I'm not asking about its state of cybernetic health but about whether it's giving you any tactile feedback or manipulative capability through your fingers. Touch is the latest to be added to the list of human senses a computer can address. It's called haptics, from the Greek *haptesthai*, meaning to grasp or touch.

One consistent thread in the development of computing is the continuing expansion of I/O capabilities. In the beginning, you input data into a computer by flipping switches, and

its output was in the form of flashing lights. As the technology developed, input came from punch cards, paper tape, magnetic tape and keyboards, while output became human-readable words and numbers on paper or a display screen. Voice input and text-to-speech reading are still in the development phase, and it looks as though haptics may be the next big thing after that.

The earliest haptic devices for computers were braille readers. With them, a blind user can move his finger along a line of metal pins that form a braille representation of the current on-screen line of text.

Although they're very useful, these devices are limited to rendering text.

There are now a few more devices that use haptic technology. Among the earliest, developed a few years ago, were joysticks and similar gaming controls that employed force feedback, offering varying resistance to movement, depending on what was happening on-screen.

The newest devices are haptic mice from Fremont, Calif.-based Logitech Inc. that use a vibration-generating motor to simulate different surface tex-



IMMERSION'S
vibrating mouse prototype

tures and materials. They're relatively simple and inexpensive, employing new technology from Immersion Corp. in San Jose. More than just a frill or a thrill, "the addition of tactile feedback to computer mice can significantly enhance user performance," says Jack Dennerlein, assistant professor of ergonomics at Harvard University. "Our laboratory studies show that people complete basic cursor-targeting tasks faster with tactile feedback."

But there are more sophisticated haptic tools available. Perhaps the best-known is the Phantom from Sensable Technologies Inc. in Woburn, Mass. This device employs a moving arm that ends in a stylus for the user to hold or a thimble into which the user inserts a finger. These are used in conjunction with software called the Free-Form Modeling System.

As the user moves the device's arm, a cursor moves around the screen. Using the device, if one encounters a "solid" object in the on-screen universe, the arm is stopped. Moving along a surface provides tactile information about the surface's texture, and the user can readily and intuitively sense curves and corners and, by exerting more pressure, cause deformation of the object.

Using "digital clay" as a sculpting medium, this system essentially does for clay and foam modeling what the word processor did for typing. The process may not be faster for creating the first object, but once that's captured, it can be manipulated, modified and re-scaled digitally. The artist can copy and reuse model features, and mirror and scale objects — and, of course, "undo" is just a keystroke away.

One major application for this technology is in movie-making, particularly in the creation of models. North Watford, U.K.-based design studio Synapse Modelmaking Ltd. used Sensable's hardware and software to design characters and figures for the recent animated feature film *Chicken Run*. Because of the digital nature of the modeling, the studio was able to get nearly instant approval from the production company, Aardman Animations Ltd. in Bristol, U.K.

The film company represen-

tative "asked if he could make a change to the model," recalls Synapse director Roger Hulks, "and we implemented the change immediately — right before his eyes." Synapse got approval for its design on the spot, and the Aardman representative was dazzled. "He still goes on about it today," says Hulks.

Training Tools

There are many potential practical applications for haptic devices in training people to develop and practice specific motor skills, such as in the field of medicine. One use is for training in surgical procedures. Another is in telemedicine, where a doctor can physically examine and palpate areas on a patient's body, receiving accurate and informative tactile feedback even though the patient and doctor are in different locations.

Locating and clearing land mines is risky business, but haptic technology can help significantly in training. The system presents the trainee with a basic representation of the area to be investigated, and, using a standard-issue military probe attached to the Phantom, he has to locate possible mines by gently inserting a virtual representation of the probe into the on-screen "ground."

Once a definite contact has been made, the trainee continues probing until a recognizable pattern of penetrations has been made. The clear advantage of the system is that it lets people make beginners' mistakes without being killed.

Haptics is also being investigated as a tool for analyzing data. Just as color and graphical representations have enhanced the ability to manipulate and understand masses of data, haptics may contribute the ability to sense additional dimensions in a single view. ▀

For More Information

- Haptics Community Web Page: <http://haptic.mech.northwestern.edu/>
- Electronic Journal of Haptics Research: www.haptics-e.org/
- Seattle Haptics Community: <http://brl.ee.washington.edu/BRL/shc/links.htm>



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TECHNOLOGY

WIRELESS WEB TECHNOLOGY appears to be catching on, at least on Wall Street if not yet in the rest of the business world. The Global Markets

Division of The Chase Manhattan Bank in New York, for example, implemented Global Market Pro, developed by wireless application service provider Datalink.net in San Jose.

"It cuts the time I spend using my handheld by 30%," says Glen Havlicek, managing director of domestic treasury at Chase Global Markets.

Global Market Pro operates on a wide range of equipment, such as two-way pagers, Waterloo, Ontario-based Research In Motion Ltd.'s (RIM) 950 wireless handhelds, Wireless Application Protocol (WAP) phones and Santa Clara, Calif.-based Palm Inc.'s Palm VII. The service offers real-time financial data from information sources like Reuters Ltd. and Market News International Inc. The data is captured by Datalink, relayed to Atlanta-based BellSouth Corp. over a landline and transmitted wirelessly throughout the country. According to Havlicek, customization is a simple matter of logging on to a Datalink-hosted personal site to specify content and format.

Unique Problems

While the Chase system is among the pacesetters in the financial sector, it doesn't yet contain the element that elicits terror in some quarters: wireless accessing of corporate networks on a massive scale. With that comes a unique package of problems such as Web page formatting for small screens, the establishment of virtual private networks (VPN) and, of course, security (see chart).

Analysts predict that by 2003, more people will be accessing the Web from wireless and handheld devices than from conventional PCs. International Data Corp. (IDC) in Framingham, Mass., for instance, predicts there will be 720 million mobile Internet subscribers, compared with 525 million wired users by that time.

WIRELESS

"Those who treat the arrival of wireless access to the Internet as just another terminal device and protocol to worry about will find themselves as far behind as those that thought the Internet was not relevant to their industry or community," says Simon Hayward, research director at Gartner Group Inc. in Stamford, Conn.

But other than the financial services sector, few industries have been paying attention to these forecasts. A survey conducted by

Boston-based AMR Research Inc. reveals that 69% of manufacturing firms allocated no funds for wireless this year. Five percent said they plan to spend on wireless next year, and 8% plan to in 2002. The numbers are only marginally better in industries such as retail, telecommunications and health care.

What's holding companies back from the wireless bandwagon? The answer is complex and has to do with worries about security, speed and the maturity of the technology.

Just like in the early days of e-commerce, confidence in security procedures seems to be missing. If you're thinking about opening your network to widespread access via wireless, you'd better be sure it's fully secure, says Patrick Wise, vice president of e-commerce at Landstar System Inc., a transportation services provider in Jacksonville, Fla.

"Anything radio-based has as big a security hole as regular broadcasting," says Tom Lyon, chief technology officer at Mountain View, Calif.-based Nokia Internet Communications. However, he points out, most cell phones have authentication that's superior to that of PCs. In addition to log-in, password and encryption elements, factors such as billing requirements, smart cards and Wireless Identity Modules (the use of digital certificates and private keys to authenticate identity) make it possible to erect a security perimeter. But, he says, security is harder to manage when Internet content is involved.

WAP, for example, is fast becoming the industry standard for delivering Internet- and

The use of wireless and mobile technology
need to make some preparations for the

BRACING THE

PATRICK WISE, vice president of e-commerce at Landstar System, says, "The limiting factor in wireless is coverage. It's only available in certain metropolitan areas."

intranet-based information to wireless devices. However, it has a potential security hole at the gateway server. While the next iteration of WAP is expected to resolve this, firewalls had better be stronger than ever when interacting with thousands of mobile users on a corporate VPN or, worse, when millions of consumers can contact the site wirelessly.

Landstar didn't seriously address security issues during its WAP phone pilot. By dialing into an Internet service provider, 35 remote drivers were able to access confidential load pickup information residing on the company's Compaq Computer Corp. Proliant server running Windows NT and Nokia WAP server software. Things have changed, however, now that wireless is being exported throughout the company.

"We need to make the application fully secure before rolling it out to all 7,100 drivers," says Wise. On top of passwords and log-in identifications, the company is using firewall and Secure Sockets Layer (SSL) technology to safeguard proprietary data.

Pump Up the Volume

But security is one thing and speed quite another. American Medical Response Inc. (AMR) in Aurora, Colo., is the nation's largest private provider of medical transportation. Operating in 36 states, AMR employs more than 20,875 people in 265 operating sites and transports more than 4 million people per year in more than 4,000 vehicles. To smooth the patient transition from ambulance to care facility, AMR is using Palm VIIi to record critical patient information while a vehicle is in transit.

"When the ambulance arrives at the hospital, the patient data is already entered into the handheld," says Tony Fernandez, an operations analyst specialist at AMR. The Palm is immediately synchronized on a cradle at the front desk, saving time on paperwork.

But with so many people under its care and with time being a life-or-death proposition for some, AMR is looking to wireless to further speed the process. According to Fernandez, the company has started to build a wireless infrastructure. By spring, data gathered in the ambulance will be relayed wirelessly while en route to the hospital. That way, the front desk will have gone through all the red tape and the patient can be taken directly to a physician.

A Wireless Checklist

The following are some points to consider when developing wireless infrastructure:

- 1 If possible, select systems that are hardware- and vendor-independent.
- 2 Adopt a client model, with most applications residing on the server side.
- 3 Be sure the help desk is ready to deal with wireless- and handheld-specific questions.
- 4 If deploying wireless globally, pay attention to regional variations.
- 5 Formulate policies that address wireless administration, device logging, synching and security.
- 6 Stick to accepted standards such as WAP.
- 7 When investing in e-commerce platforms, examine a vendor's WAP capabilities.
- 8 Locate the WAP gateway server inside the corporate firewall rather than with the wireless provider.
- 9 Test all mobile wireless devices and peripherals for security before deployment.
- 10 Use Wireless Transcript Layer Security (a variant of SSL), as it permits client and server authentication.

The volume of traffic envisioned at AMR is unlikely to severely test current wireless security capabilities. (SSL can handle up to 50 connections per second, according to Lyon.) But what do you do when that rate is exceeded? Lyon says he believes IP clustering — maintaining a single IP address that's clustered over many boxes — may be the solution. "With potential wireless loads, there is no one piece of hardware that can handle everything," he says.

Another potential bottleneck that many fail to take into account is landline bandwidth. Remote users communicate wirelessly only with the nearest phone company transceiver. From there, wires bring the data to corporate or hosted servers. Thus, the size of

the pipe has to be more than adequate.

"If you are running at 60% on a T1 or T3 currently and intending to broadly implement wireless, plan ahead for more bandwidth," says Ray Collins, systems integration manager at Santa Ana, Calif.-based Alpha Microsystems. His company developed Field Access, a wireless middleware application for 110 field engineers deployed remotely repairing desktops and providing network support. They access custom data via Palm VIIi and wirelessly receive and transmit alerts and updates. Collins says return-on-investment realization took four months.

Wireless users connect via BellSouth to a secure Windows NT-based intranet/extranet at the Alpha Microsystems facility that operates over Web-enabled devices such as RIM pagers, Nextel Communications Inc. text phones, Palm devices and some Windows CE devices. "It's very important to make wireless applications hardware-independent," says Collins. Based on user feedback, having forms served up at the server end rather than by the devices themselves is making clients much thinner than before.

Alpha Microsystems made this switch due to the speed ceiling on wireless transmissions. Field Access, like most of the current wireless crop, runs at only 9,600 bit/sec. But according to mobile vendors, 144K bit/sec. is right around the corner. Until then, it's essential to minimize content by keeping replies brief and forms stripped-down, says Collins. And until proven technology exists to convert any Web page and serve it to a small screen, companies will have to generate content specifically for wireless users.

"People think you can just 'reformat' existing applications for small devices. This is a fallacy," says Jacob Christfort, chief technology officer at Oracle-Mobile Inc., a wireless application service provider in Redwood Shores, Calif. "You need to think about the unique mobile situation and create truly mobile applications that make sense for your company and will justify the investment."

Coverage

But for all the worries over security, speed and the maturity of technology, some say only one barrier remains. "The limiting factor in wireless is coverage," says Wise. "It's only available in certain metropolitan areas." The last thing his company needs is for drivers to miss business opportunities if they're outside the range of wireless networks, he says.

Collins says he's also concerned about the lack of universal wireless coverage. "Applications need to be able to function when they are outside of normal range," he says. "Devices should be able to seamlessly capture data and feed it into the system as soon as you get back into a covered area."

Cellular companies are urgently addressing the coverage question, and they're gearing up for the boom. According to Iain Gilott, IDC's vice president of worldwide consumer and small-business telecommunications, new shipments of all digital handsets worldwide will be WAP-capable by next year. The big players can't afford to miss the market opportunity represented by mobile Internet access, he says.

Lyon says he's convinced that it won't be long before the business world wakes up to wireless. He recalls early cell phone woes such as billing fraud and roaming charges. "Mobile didn't work until these issues were resolved," he says. "But as soon as people realize how advanced wireless really is in terms of security and scalability, the mad rush will begin." ▶

Robb is a Los Angeles-based freelance writer specializing in technology issues.

gies in the enterprise is exploding, but you
handheld revolution. By Drew Robb

ING FOR BOOM

Putting Data On the Map

Want to take digital geographic data from one Web app and combine it with data from a different app onto a single map? It's not as easy as you'd think — not yet. By Sami Lais

IF ALL THE DATA for all the digitized maps were stacked end to end, it could hardly be less useful than the current state of affairs. Yes, one can combine brownfield location data in one format with highway data in a different format and display them on a map in yet a third format — but only with considerable effort by a skilled professional.

That situation will improve if the industry group OpenGIS Consortium Inc. (OGC) in Wayland, Mass., succeeds in its efforts to create a single Web Mapping Server Specification (WMS).

Using WMS-enabled software and a Web browser, a user could search for geospatial data over the Web, much as one might do a search on a keyword.

A search looks at service registries, which contain metadata for services, and catalog services, which contain metadata for geospatial data sets, to find the needed Web addresses. "A couple of experimental [service registries] are running," says analyst Allan Doyle at geographic information systems (GIS) consultancy International Interfaces Inc. in Needham, Mass. The Federal Geographical Data Committee's Clearinghouse will be a service registry for federal data, he says.

But "setting up and running a service registry is actually a good example of a new business opportunity that arises, much like people figured out early on with things like Yahoo," Doyle says.

With no user intervention, other than initiating the search, the application will send requests to the Web addresses for the data from the different sources to be presented as separate layers in JPEG or graphics interchange format. The user can then combine the separate layers to view a single image.

The U.S. Geological Survey, the U.S. Agriculture Department, the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA) and the National Imagery and Mapping Agency historically have all been major users of GIS applications and major supporters of the OGC.

The OGC provides a venue to coordinate and develop standards based on a business model, says David Schell, the consortium's president. "We don't define or attack a problem unless the market first says it's a problem," he says. "We're not in the business of creating an abstract system to have a complete intellectual structure." The 230 OGC members include federal agencies, leading GIS vendors and international standards organizations, Schell says.

A major push for interoperability is coming from telecommunications companies eager to deliver location resources such as those beginning to be available in Japan and Europe, Schell says. French location resource provider Webraska Mobile Technologies offers maps, traffic information and navigation services to users of mobile phones in five European countries. Users of the real-time traffic information services see maps on their phone screens with jammed roads in black, heavy traffic in gray and free-flowing traffic in white, a Webraska spokesman says.

Working with standards bodies such as the Internet Engineering Task Force and the World-Wide Web Consortium, the OGC hopes to develop mapping standards that interoperate with existing network and communications standards, Schell says.

"Toys tend to lead a lot of markets," Schell says.

"The idea of using [the WMS technology] for simple 'Where am I?' applications tends to distort its value. The market needs to be defined by more complex devices and applications." Such uses abound, he says.

In Massachusetts, for example, land costs are skyrocketing, and real estate developers are interested in contaminated sites designated by the EPA as brownfields, Doyle says. For office buildings, it's often cheaper to buy such sites and clean them up than it is to pay for undamaged land.

Using WMS-enabled software, the developer could create a map showing all available brownfields (EPA data), flood plains (FEMA data) and highway systems (U.S. Department of Transportation data) to aid in making decisions about sites, Doyle says.

"Today, that's not possible," except by time-consuming data transformation and compilation by a GIS professional, he says.

WMS has emerged since last October through iterative interoperability testing by OGC members in Web Mapping Testbed 1, Doyle says.

Making geospatial data sets available via the Web and a standard interface solves a knotty problem surrounding responsibility for data integrity, Doyle says.

The real estate developer could get CDs of data from the different agencies and create a map of potential office sites, he says. But to keep the map current, the developer would have to take responsibility for keeping each data set current. "It becomes an n-squared maintenance problem," Doyle says.

But although WMS makes images of multisourced maps available via the Web, that doesn't solve all problems. What if you need not only to see, but also to manipulate the geographic information?

That's the thorny issue that Web Mapping Testbed 2 is working on — making interoperable data sets from multiple sources, Doyle says. The planned Web Mapping Feature Specification would let the developer

"grab the most current data off the Web and leave the data with the agency with the greatest stake in keeping it current," he says.

Geographic Markup Language (GML), XML's geospatial cousin, may be the most powerful tool yet for making vast amounts of geospatial data accessible.

Few fields of technology have GIS's rich history of development by universities, federal agencies and vendors. And that's the rub, says Kurt Buehler, the OGC's vice president and chief technical officer.

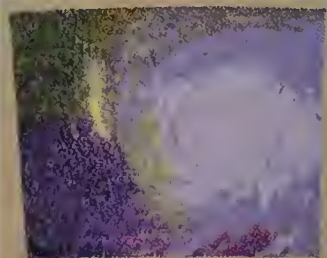
"GML offers the schema to put geographic information into XML," he says. By building on such an increasingly widely supported standard, the OGC hopes to simplify access to geographic information.

The OGC is developing a WMS-compliance test, Schell says. But ultimately, it won't be needed, Doyle says. "It'll be like e-mail. When you buy messaging software, you just expect to be able to exchange e-mail with" different e-mail packages, he says. ▀

MAPPING STANDARDS

Mapping Synergy: The Whole Exceeds the Parts

The weather maps we see every night on television or in the newspaper are an excellent example of the added value that results when combining geographical data from different sources. **Graphic A**, for example, is a satellite photo of a storm in the Gulf of Mexico. But exactly where is it? **Graphic B** shows boundaries and population centers in the Gulf states. When you get the scaling right, the two can be combined as in **Graphic C**, providing important information.



A



B








C

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Middleware

DEFINITION

Middleware is the software that connects — or glues together — applications and users, allowing them to communicate with one another across a network.

BY LINDA ROSENCRANCE

LIKE PEOPLE from different countries who can't communicate without a translator, applications running different types of software or operating on different computer platforms need help communicating.

Enter the middleman — called middleware.

Middleware, software that functions as a translation layer, sits between an application residing on one server and any number of clients that want access to that application. In short, middleware allows users to interact with one another and with applications in a heterogeneous computing environment.

It's important to note that the functions middleware provides are hidden, so that applications and information can be easily — and smoothly — accessed across different architectures, protocols and networks.

Automates Business Operations

Middleware also automates business operations, tying together a company's back-end and front-end operations. Look at it as the glue that connects disparate applications such as Web-based applications and older mainframe-based systems. It lets companies continue to benefit from their investments in legacy systems while allowing them to connect with newer systems and the latest developments that drive newer applications.

In the fast-growing world of e-commerce, for example, mid-

dleware can help a company be successful by linking its payment, accounting, production and shipping systems with its Internet-based, customer-focused applications.

Broad Functions

Middleware functions can be divided into three main categories: application-specific, information-exchange and management and support middleware.

Application-specific middleware provides services for various classes of applications such as distributed-database services, distributed-data/object-transaction processing and specialized services for

mobile computing and multimedia.

Information-exchange middleware handles the exchange of information across a network. It's used for tasks such as transferring data, issuing commands, receiving responses, checking status and resolving deadlocks.

Management and support middleware is responsible for locating resources, communicating with servers, handling security and failures and monitoring performance.

Specific Types of Middleware

The types of middleware include database middleware, application server middleware, message-oriented middleware, transaction-processing monitors and Web middleware.

While all middleware performs communication functions, the type of middleware — or the combination of products — that a company chooses will depend on exactly what information needs to be communicated.

Consider kitchen knives, for example. Several types of knives are available, but a diner

wouldn't use a butcher knife to cut medium-rare filet mignon.

So if access to a database is a top priority for a particular company, then database middleware is the way to go. However, it's more likely that the company will use database software with other types of middleware.

Database middleware only enables applications to communicate with one or more local or remote databases. It doesn't transfer calls or objects. And while database-oriented middleware is easy to deploy and relatively inexpensive, it doesn't include features found in more complex software products.

Database middleware, for example, doesn't allow for two-way communication between servers and clients. Servers can't initiate contact with clients, they can only respond when asked.

Application server middleware is a Web-based application server that provides interfaces to a wide variety of applications and is used as middleware between browser and legacy systems.

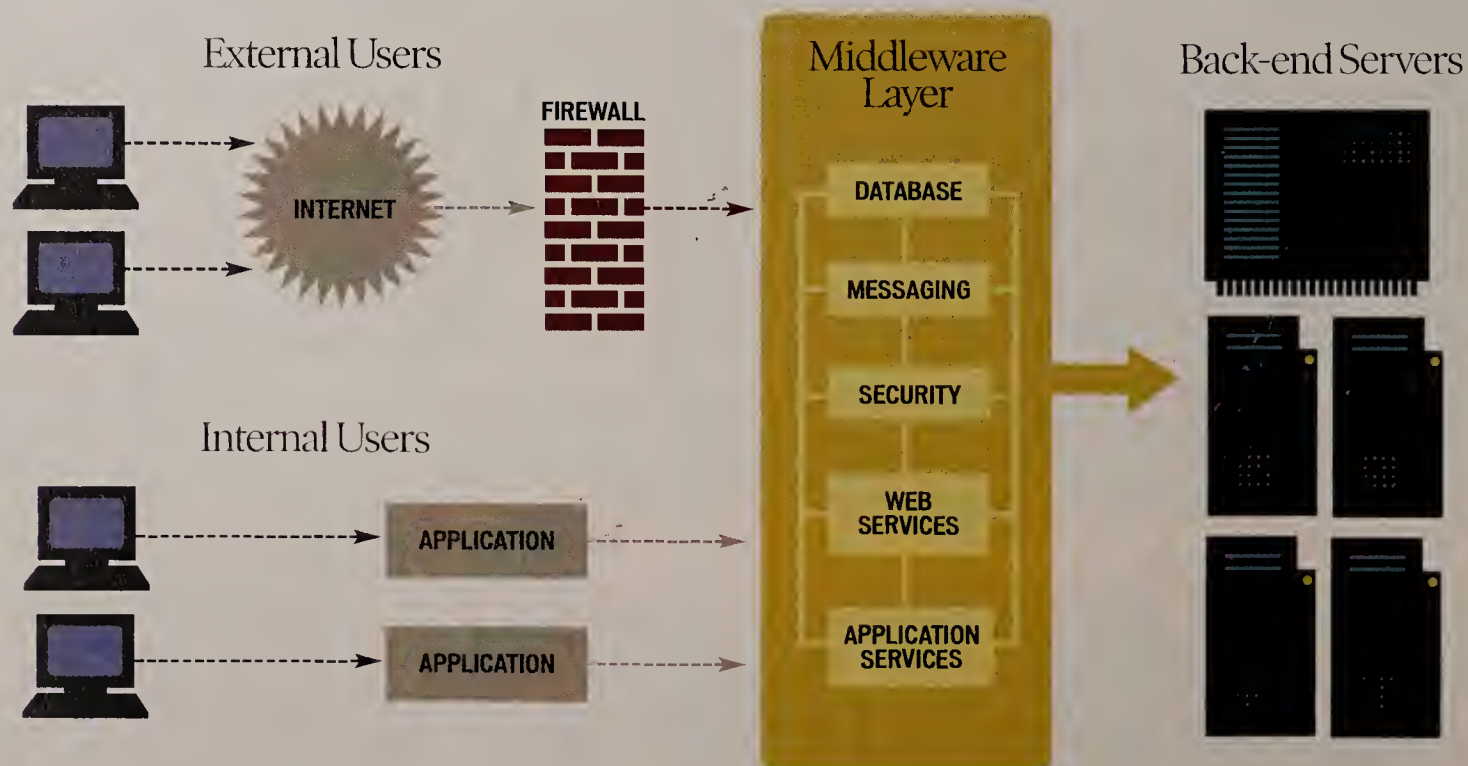
Messaging-oriented middleware provides an interface between client and server applications, allowing them to send data back and forth intermittently.

Messaging middleware is similar to an e-mail system, except that it sends data between applications. If the target computer isn't available, the middleware stores the data in a message queue until the machine becomes available.

A transaction-processing monitor is middleware technology that sits between a requesting client program and databases, ensuring that all databases are updated properly. It's a control program that manages the transfer of data between multiple terminals and the application programs that serve them.

Finally, companies looking to succeed in e-commerce must have information systems with the ability to respond to changing business requirements. And Web middleware allows those companies to more easily integrate back-end applications with new e-commerce systems. ▀

How Middleware Translates for Clients



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Start-up Wants to Be Security Central

E-Security's software lets firms view all their security applications at once

BY ROBERT L. SCHEIER

INFORMATION SECURITY architect Joe Judge faced a security challenge. But he didn't want to have to become an expert in Simple Network Management Protocol (SNMP) to solve it.

Judge monitors security for not only the 150 servers under the roof of his employer, Boston-based Adero Inc., but also for the 200 servers Adero runs at facilities around the world. Those remote servers are critical to Adero's business of speeding the delivery of Web content to users. But since Adero doesn't own most of the remote facilities, it can't guarantee physical security at those sites.

"I wonder if a locked [server] cabinet is open in Hong Kong right now, and is someone touching our machine," says Judge. That's the sort of information typical network management products don't gather, never mind most security tools.

But Judge found a way to track this information relatively painlessly using the Open e-Security Platform from e-Security Inc. The Melbourne, Fla.-based start-up, founded in July last year, claims to offer the only comprehensive, real-time view of all of a company's security monitoring tools.

Growing Pains

While that claim is open to question, several customers and analysts agree that the e-Security platform is easier and less expensive than other approaches currently available. Enterprise management products such as Computer Associates International Inc.'s Unicenter, Hewlett-Packard Co.'s OpenView or those from Tivoli Systems Inc. could gather and present security data, but only "with difficulty," says Steve Hunt, an analyst at Stamford, Conn.-based Giga Information Group Inc.

On the other hand, e-Security is a start-up dealing with some of a start-up's classic growing pains. Last month, co-founder, President and CEO Steve Kahan resigned and Chief Financial Officer Joe Marcus was fired in response to pressure from investors for tighter financial controls and a

stronger management infrastructure. Says newly named President and CEO Nicola Sanna, "We see the security market exploding in 2001, and we want to be ready to scale up and be able to sustain our growth." Sanna says no other jobs have been cut and no changes are expected in the firm's technology or marketing strategies.

Consider Judge's open-cabinet problem. Rigging up a door switch to the server's parallel port would be easy, says Judge,



"WE SEE the security market exploding in 2001, and we want to be ready to scale up," says President and CEO Nicola Sanna

e-Security Inc.

Location: 700 S. Babcock St., Suite 200, Melbourne, Fla. 32901

Telephone: (800) 474-9191

Web: www.esecurityinc.com

Niche: Provides a single, integrated, real-time view of a customer's multivendor security environment

Why it's worth watching: It's among the first in a key niche. Customers and analysts say its tools are easier to use and less expensive than those of competitors.

Company officers:

- Arthur Allen, founder and chairman
- Nicola Sanna, president and CEO
- Shazia Azami, interim chief financial officer
- Chris Pick, vice president, product development

Milestones:

- July 1999: Company founded; product suite released
- October 1999: Wins Du Pont Co. as a customer

• January 2000: Announces integration with 29 security products

Employees: 50; expected to double within a year

Profitability date: Expected by the middle of next year

Burn money: \$5.5 million from Allen and other sources; a \$20 million round is expected this fall.

Product pricing: \$32,995 for the Open e-Security Platform; \$7,995 for e-Security Administrator Workbench; \$250 to \$2,500 for each security device or software tool linked to Open e-Security Platform

Customers: Du Pont, Summit Bancorp, Adero, EMC Corp. and First USA Bank NA

Partners: Andersen Consulting, Computer Sciences Corp., DynCorp

Red flag for IT: Larger competitors might acquire this small start-up.

but "HP and Tivoli don't monitor that. For you to write a program [that would capture such alerts], you would have to have a set of skills most people don't have." But using e-Security's Administrator Workbench, "in less than 15 minutes, I [wrote] a small script to read from the parallel port," he says.

Filling a Niche

Summit Bancorp was able to get the Open e-Security Platform up and running "within about 12 to 15 days," says Wayne Browning, vice president and information security manager at the financial services firm in Ridgefield Park, N.J. That short implementation time is even more impressive, Browning says, considering that it included linking Windows NT event logs, Novell Inc. network auditing tools, remote-access servers, antivirus applications, intrusion-detection systems, host-based policy monitoring, Web servers, external routers and firewalls, among other systems.

That's why Sanna compares using the e-Security platform with having an air traffic controller's view. The console is a Unix application running on a Solaris workstation and can present physical, logical or entity relationship views of security data gathered by software agents or from SNMP data

already created by security products such as firewalls. Then there's the workbench for developing scripts and filters needed to monitor a customer's environment. Giga's Hunt says e-Security "fills a niche" as a complement to large management suites such as Tivoli.

E-Security's Chris Pick, vice president of product management, is more upbeat, saying e-Security is a good match not only for corporate customers but also for the growing ranks of managed service providers that outsource parts of a customer's information technology function.

"We believe there is a huge market there for this stuff," Pick says. Especially if that "stuff" can solve security problems more easily and cheaply than the big boys of enterprise management can. ▀

Scheier is a freelance writer in Boylston, Mass.

[the buzz]

STATE OF THE MARKET

Broad Appeal

Executives at e-Security like to call their product the Switzerland of security — the only neutral platform where security managers can get real-time data from all their security tools.

In contrast, many competing consoles ship as enhancements to existing enterprise management or security tools.

"Hewlett-Packard's OpenView is often used to do much the same thing, but it takes some work," says John Pescatore, an analyst at Stamford, Conn.-based Gartner Group Inc. Computer Associates' Unicenter and the Tivoli framework can also be used to gather and display security information, he adds, "but the choice of security products that work with those tools [is] limited, and it requires enterprises to make big investments in those frameworks."

Another disadvantage of such products is that management tools and the staff who monitor them are looking for data that will help them keep their networks running. Security staff, on the other hand, "look for malicious or anomalous security events" and need tools tailored for that purpose, says Giga Information Group analyst Steve Hunt.

The following are among the players competing in this new area:

Computer Associates International Inc.

Islandia, N.Y.
www.cai.com

CA's eTrust is an integrated security suite that can detect, analyze, warn of, prevent and cure attacks, including malicious mobile code, worms, viruses and intruders.

IBM

Armonk, N.Y.
www.ibm.com

IBM's SecureWay First Secure is a framework that lets managers integrate security for Web and legacy systems, Tivoli Availability products for uninterrupted network services and Tivoli Administration products that offer centralized management for secure networks.

OpenService Inc.

Albany, N.Y.
www.openservice.com

OpenService's SystemWatch monitoring platform "ships with all of [Nokia Internet Communications Inc.'s] Internet security appliances and can manage Check Point and [Internet Security Systems Inc.] products," says Pescatore.

— Robert L. Scheier

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"YOU NEED to see each person as an individual and support their needs," says AB Volvo's Martin Jerresand



CHERRY KIM

When the Boss Is Half Your Age

Increasingly, younger – much younger – information technology professionals are finding their way to the very top of organizations. This trend is creating some challenging cultural issues for managers and their staff.

By Christine Willard

THAT BRIGHT techie who arrived as an intern five years ago is now your new boss, leading the project you've worked on for the past year. What's wrong with this picture? And who are the Red Hot Chili Peppers, anyway?

Jeff Kaye, 33, president and chief operating officer of Kaye/Bassman International Corp., a management recruiting and consulting company in Dallas,

joined the firm shortly after graduating from the University of Texas at Austin in 1988. His star rose rapidly, and five years ago he became partner with Bob Bassman, now 62.

"I felt that discomfort of achieving much more than colleagues twice my age in the early '90s, when companies were downsizing," Kaye remembers. He compensated by being overly respectful. "I was already service-minded. By listening, I generated more re-

spect from them."

Management has had to become sensitive to the needs of Generation X Web designers who don't want to wear ties to work. "They want quality of life, balance of work life, job share, flextime," Kaye says. Management philosophies are shifting, becoming more service-oriented, to accommodate these new workers.

Patience Helps

Bonnie Russell, who runs her own Web-based legal service business, 1st-pick.com in Solana Beach, Calif., worked for a boss 10 years her junior at Lawgic Publishing Co., a legal software company in Novato, Calif.

"She was probably the smartest person there, and I'm pretty smart," Russell says. "She had a reputation for having a sharp edge on her words, but she was patient with me. If

I didn't grasp something, she just attributed it to [my having] a 'senior moment.' I think she was more conscious of the age difference than I was. The upshot of the whole experience was that it worked out just great. We're both following our dreams now."

"Managers [who] are more like coaches support their employees in achieving their career goals," Kaye says. "They are acting out of concern for each one as a person first."

Not that it's all selfless — the pressure is on for companies to retain employees in a labor market that's short of candidates for information technology jobs. "They may feel, 'I'd rather be a jerk and a micro-manager,' but it ultimately impacts profits," Kaye says.

Father and Son

At NetVendor Inc., a business-to-business e-commerce consulting company in Atlanta, CIO John McCloskey, 55, works for the CEO — his son Sean, 33.

The elder McCloskey is one of three engineers who started the company. Sean, a lawyer, provided the financial and legal underpinnings. They say they value each other's expertise: John's technical and business savvy and Sean's strategic knowledge and financing connections.

John says he occasionally chafes because his son lacks an appreciation for his greater experience and historic perspective. "I'm more cautious, having been through things like Nixon's wage and price controls," John offers. "Perhaps I'm not as optimistic as he is."

Sean, who started his first business, a landscaping company, in high school and later sold it for six figures, says he tends to focus more on rapid growth. But recent corrections in the stock market are helping John make his point.

"One thing the young guys can't get until they are old is wisdom," says Kaye. "You can't accelerate the learning curve on that."

At work, the McCloskeys keep it professional. Meshing two strong personalities can produce some sparks, but they switch gears to play golf and spend time with the family.

"You have to earn respect from both sides," says Martin Jerresand, an application de-

veloping technologies manager for new and emerging technologies in North America at Sweden-based AB Volvo. At 28, he manages employees ranging in age from 22 to 53. He says he needs to gain the respect of those he manages as well as credibility with the vice presidents to whom he reports. "You don't get anything for free," Jerresand says. "You have to have the support of your managers."

"It does get personalized," Jerresand says, pointing to when he has to tell someone who has worked on an application that a decision has been made to use a different one. "We are in the world of the Web, and that technology has only been around for about three years," he says.

It can be an advantage not to have too much baggage in terms of a commitment to a particular technology or application, Jerresand points out.

Good, basic people skills are the answer to solving problems. "You need to see each person as an individual and support their needs," Jerresand says. He says he feels that cultural differences between the U.S. and Sweden may work in his favor. "I get my pride from doing well [in] a group," he says. "If some individual has done something good, I make sure I say they did it."

Is all this new, young blood a good thing? Kaye says yes. "It's bringing the emotion, the heart into management," he says. ▀

Willard is a freelance writer in Los Osos, Calif.

Thinking Young

Some pointers on how to deal with a boss who's younger than you:

- You may have to work to earn the respect of young managers, who may not automatically have regard for your age and experience.
- On the other hand, young bosses probably aren't threatened by you.
- "Show a little respect for their skills – and growth, when you see it – and they'll be a delight to work with, if somewhat perplexing from time to time," advises the authors of *Generations at Work* (Amacom Books, 1999).

– Christine Willard

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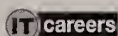
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Full-time Senior Consulting Engineer. Responsible for the supervision of a team of technical engineers in radio network planning and radio network planning support to facilitate PCS network performance optimization and PCS network engineering using Solaris and Windows NT operating systems, installation and support of Informix and Oracle databases. Plan, implement and optimize digital wireless networks including cell site location and analysis of performance using industry standard radio tools. Provide technical support and installation services for digital radio planning tools including operating system installation, application trouble shooting and customer support. Specification of feature requirements for digital wireless radio planning tools including IS-95 and PCS requirements. Must have a Bachelor's Degree in Electronics Engineering for foreign degree equivalent. Must have 4 yrs of experience in the job offered or position with same duties. Salary: \$85,000/yr. Send resume to: Stephen Greenwood, Personal Communications Consultants, Inc., 6333 Long Street, Shawnee, KS 66216.

Programmer Analyst/Database Administrator/Systems Analyst/Computer Engineer: Design, develop and test computer programs for business applications using Java, C++, VB, ASP, Unix, Oracle Database, SQL Server. Min: Bach. in Comp. Science, Comp. Engg., Info Systems or Elec. Engg. (or equiv.) and 1 yr exp.

Resume: HR Dept., Fulcrum Logic, Inc., 313 South Ave., Suite 102D, Fanwood, NJ 07023.

Computer Engineer wanted by Production Co in Miami Beach, FL. Must have Bach or equiv in Comp Engg & 1 yr exp dsgng brochures & other printed materials using Adobe Photoshop & picture manipulation. Respond to: HR Dept. Pipin Products, 820 NE 126th St, North Miami Beach, FL 33161.

Unique Computing Inc., is a high-growth software development and consulting organization engaged in architecting, designing, developing, deploying and managing multi-tiered applications using state-of-the-art technologies and tools. In order to staff a number of projects at various stages in the development cycle, we are seeking to hire software engineers, developers, architects, analysts and administrators with experience in one or more of the following areas:

Development Languages/Environments: C++, Visual C++, Visual Basic, PowerBuilder, HTML, Java Script, ASP, Java, AWT, Developer 2000, Lotus Notes.

Enabling Technologies: Enterprise Java Beans, RMI, COM/DCOM, MTS, CORBA, Tuxedo

Web Servers: IIS, Apache, Netscape Application Server, Oracle Web Server, Domino

Databases: Oracle, Sybase, SQL Server, DB2

Operating Systems: Windows NT, Unix, Linux

To be considered for a position, the candidate must have at least a B.S./M.S. degree or equivalent in computer science, engineering, mathematics or a related field, and 1-5 years of work experience.

Compensation packages are designed to attract and retain the best talent. Send resume to: Human Resources, Unique Computing, Inc. 1661 Worcester Road, Framingham, MA 01701, or fax to: (508) 598-6101, or e-mail to: hr@uniquecomputing.com

We must fill a position for a Modeling and Simulation Analyst. The analyst will support the center of modeling excellence in Washington, DC, by providing expertise in developing simulation models to improve the Supply Chain business practices of local private and public sector industries. Specific duties/skills will include: Providing expertise in logistics analysis, requirements definition, and Object Oriented simulation model development in order to improve Supply Chain efficiency. Leading project teams in the development, implementation and support of integrated information systems using Simple++ /Visual Basic/C++. Building data-warehouses to gather, store, and manipulate the high volume of legacy system data of large commercial operations. Preparing and presenting technical reports to internal and external senior management. Must possess expert knowledge of relational databases and SQL, a full understanding of heavy industry logistics practices, a detailed knowledge of military Air Force repair processes, practical experience in a variety of software development languages and methodologies, and extensive knowledge of all MS Office applications. Applicants must have a Bachelor's degree in Computer Science/Operations Research or related field plus two years of Supply Chain Management experience in a systems development role. Job Location: Warner Robins, Georgia. Salary: \$61,000.00/year. Please forward resumes to: Attn: R. Jardin, DRC, 605 Russell Parkway, Suite A, Warner Robins, GA 31088. EOE/AA.

SOFTWARE ENGINEER to provide on-site consultancy in system analysis, design, software application development, testing and implementation using C, C++, Java programming languages, in client/server, Web, UNIX, Novell Network, Windows environment and relational database Oracle; analyze client's business requirements and specifications through interaction with users; design new systems using information engineering techniques, systems modeling and database design; responsible for complete project management from conception to implementation. Require: M.S. (or equivalent) in Computer Science and two years experience in the job offered or any experience providing skills in described duties. 40% travel required to customer sites within the United States. Salary: \$64,000 per year, 8 am to 5 pm, M-F. Mail resume to: President, Business Oriented Software Solutions, Inc., 3040 Holcomb Bridge Road, Suite D-2, Norcross, GA 30071.

SOFTWARE ENGINEER: Analysis, design and development in client/server architecture using Oracle database and Oracle Software development and design tools. Extensive knowledge of Data Structures, Database Design and Conceptual modeling. Knowledge of Oracle Database internals and related techniques for query optimization, indexing techniques, Physical Data Storage, parallel and distributed database systems. The job duties are System analysis, design, development, testing and implementation of software projects in client/server and datawarehouse architecture environment, Maintaining production control and database administration. Adherence to software development standards and procedures. Requires Masters in Computers with no experience required. 40 hours per week at \$ 105,000 per year. Please send 2 copies of resumes to Case # 20002990, Labor Exchange Office, 19 Staniford Street, 1st Fl. Boston, MA 02114

Software Engineers

At Atlantis Interactive, an Internet and customer service solutions company, we work to take Internet projects from prototype to launch. Striving for excellence in the design and development of highly customized web sites, we change the way business is done over the Internet.

Due to our growth, we are in need of Software Engineers. In this role, you must have significant technical experience with excellent communication skills and an enthusiastic and entrepreneurial personality. Ideal candidates will be well versed in object oriented software engineering, software architecture, Com/D Com, Java, C++ and Oracle Development.

We offer exciting and competitive compensation and benefit packages. Only qualified applicants will be contacted. Interested candidates should forward their resumes to **Human Resources, Attn: Garry Randall, Walker Digital Corporation, Five High Ridge Park, Stamford, CT 06905.** No phone calls please. An Equal Opportunity Employer. M/F/D/V

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Trustek, Inc. Consulting firm is seeking Software Engineers w/MS and min. 1 yr. exp. or equivalent or Progg. Analyst w/BS deg. & 2 yrs. exp.

Traveling/Relocation will be required anywhere in U.S.A.

▼ C, C++, Windows/NT, Informix/7.1, CGI Scripts, Sybase
▼ Perl, HotMetal Pro., MS SQL, Web Pages, E-Commerce

▼ Lotus Notes, Lotus Script, Domino Server, Java, Java Script

▼ HTML, Oracle, Developer 2000, RDBMS, Corba

▼ Y2K Comp., Forms 4.0, Reports 2.5, Crystal Reports

▼ DBA, ASPs, Visual Basic, Web Design/developer

▼ ABRAXAS, SIEBEL (Sales & Call Center) SIEBEL VB

▼ DHTML, JDK Swing, Visual J++, Jbuilder, Visual Cafe

▼ SAP R/3, HP-UX, SUN OS, Solaris, Cold Fusion, Broad Vision,

▼ Silver Stream, Clarify, WebLogic, WebSphere, Java WebSphere, Linux,

▼ EJB, Servlets, Applets, JSP, COM, DCOM, DML, UML, Relational Rose,

▼ Oracle Financials, ABAP/4, PL/SQL, MS SOL Server, Sybase, SOL.

The applicant should also have exp. in: interface w/hardware & software, Provide functional cust. implement, config, train, analyze, interpret, code, test, backup, install, manage, customize, tuning, perform AS-IS study, of software. Dev Internet/Intranet appl., stored procedures, triggers. Create: database tools, tables, files, roles, indexes, space mgt, reorganize & sec. Asp, Web pages.

Apply w/resume to
Attn: Recruiter
860 U.S. Route I.N #4
Edison, NJ 08817.

SYSTEMS ANALYST: Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer systems. Bachelor's degree in computer science, engineering, or math-related and two (2) years experience in job offered required. Two (2) years experience required using Power Builder 4.0/5.0, Sybase System X/XL. \$62,920/year. Must be able to travel and work at client site for many months at a time.

Interested applicants apply by resume (2 copies) to Georgia Department of Labor, North Metro, Job Order #GA 6919188, 2943 N. Druid Hills Road, Atlanta, GA 30329, or the nearest Department of Labor Field Service Office.

Full-time Equipment Engineer, Responsible for evaluating, installing, testing, calibrating, and maintaining SMT assembly equipment. Responsible for defining and developing new assembly processes per product design requirements. To generate SMT placement programs using MCS, F4G, FujiCam software for proto-type and existing products. To troubleshoot SMT process and equipment problems to eliminate the root cause of these problems. Must have an Associates degree in Electronic Engineering or foreign degree equivalent. Must have 8 years of experience in job offered or a position with same duties. Salary: \$58,234/yr. Send resume to Lori Smith, Vitel Technologies, Inc., 6080 Northbelt Parkway, Norcross, GA 30071.

International Telecommunications Software company has various openings, including Director of Engineering to direct activities of engineering department including projects, personnel, budget and client relations. Engineering Managers to oversee engineering project teams and Senior Software Engineers to design and develop client/server applications. Industry experience required. If interested and qualified, forward resume to: Maura Rodenhiser, Human Resources Manager, Elron Telesoft, Inc., 7 New England Executive Park, 10th Floor, Burlington, MA 01803.

Programmer/Analyst sought by Capital Markets firm in NYC with the following skills: C++, Java, SQL, Unix and NT. Send resumes to: Fuji Capital Markets Corp, 2 World Trade Ctr, NY, NY 10048.

Software Developer positions available at NJ computer consulting firm to develop and design e-commerce applications. MS in Comp. Sci or related field or BS + 5 yrs exp. Send resume to HR Department, Fusion Technologies, Inc., 355 Main Street, Metuchen, NJ 08840.

Computer Consultant wanted by Computer Consulting Co in Monmouth Junction, NJ. Must have BS in Comp or Engg & 4 yrs exp in coding, testing & user support in IBM mainframe environment. Respond to: HR Dept, Sunriso VAR, Inc., 18 Zev Court, Monmouth Junction, NJ 08852.

Project Manager for SAP Human Resources module wanted by Integrated Systems Consulting Co. in New York City, NY. Must have Bach. degree in Comp. Sci. or Mgmt Info Sysms and 1 1/2 yrs. exp. Must be ASAP qualified and SAP Certified in all sub-modules of the SAP HR and Payroll modules. Freq. travel req. Reply to: HR Dept., Spearhead Systems Consultants (US) Ltd., 55 Broad St., New York, NY 10004.

Project Leader: Using OO methodology to dsgn & dvlp C/S applcs for business processes for clients; internal d/base; Win applcs; implmt & test new system; maintain s/ware for internal use; using Win95/98/NT, Oracle, Power Builder, VB, C. Req BS or equiv in CS or rel'd field, 5 yrs exp in multi vendor appl. devel. Demo'd knowl in HTML, Front page, Dreamweaver, ASP, AutoCAD & Autoslip. Competitive sal & benefits. Send resume to Attn: Krishnan/Dr. Mani, Cornet Technology, Inc, 6800 Versar Ctr, Springfield, VA 22151. Fax: 703-256-2287, email: nkrishnan@cornet.com.

Software Programmer - Software development of E-business sites, Java, and Net.Commerce as per client specifications. Min reqs: Bachelor's Degree in Computer Science, Engineering, or related field, 2 years experience in information technology field. 40 hrs/wk, 9-5. \$68,000/yr. Send 2 resumes to: David Thompson, Thompson Technologies, Inc., 225 Town Park Dr., Ste. 195, Kennesaw, GA 30144.

Computer Programmer sought by Import/Export Company in New York, NY. Must have BS in Comp Sci, Engg or Mathematics & 2 yrs exp. in programming and analyzing import and export data reconciliation. Respond to: HR Dept, Panaria International, Inc., 1200 Broadway, New York, NY 10001.

VP/Software & Network Engineering wanted by Network Integration & Communications Sales Co in New York, NY. Must have Bach in Elec Engg & 5 yrs comp exp. Respond to: HR Dept, South Asian Media Wise, Inc., 104 West 27th St, New York, NY 10001.

Senior Web Architect/Developer Design and develop web solutions for e-business clients. Complex internet/networking. May act as team leader. Java, HTML, XML, C/C++, Perl, ASP, VB, Netscape server, IIS, Lotus GoDomino, IBM WebSphere, UNIX proficiency (AIX, Sun Solaris), DB2, Oracle. Req'ts: MS + 4 years exp. software programming/analysis, prior exp. with e-business solutions. Company offers competitive salary and benefit package. Job in Burlington, VT area. Reply to: Patrick Waters, G'nesh, Inc., 45 Swift Street, S. Burlington, VT 05403. Reference Ad #G202

Senior Database Administrator wanted by Computer Consultant Company. Must have a Bachelor's degree in Computer Science or Computer Engineering with at least two years experience. Please send resume to HR Dept., Norcapco Integrated Solutions, Inc., 10 Corporate Place South, Piscataway, NJ 08854. Fax number: 732-465-0200.

Technical Consultant - Planning and integration function of projects. Producing planning documents describing functional overviews of system architecture and features, i.e. CALEA and Call Federation. Min reqs: Bachelor's Degree in Computer Engineering, 2 years experience in technical consulting. 40 hrs/wk, 9-5. \$46,000/yr. Send 2 resumes to: K.V. Panchapakesan, Ekatek, Inc., 631 Champignons Dr., McDonough, GA 30253.

S/W Engineer wanted by networking consulting firm in Purchase, NY. Must have extensive experience in s/w distribution & scripting. Must have M.S. Comp. Sci. or Eng'g & 2 years of s/w experience. Send resume to: HR (D.C.), Strategis Strategic Information Systems, 2700 Westchester Avenue, Suite 120, Purchase, NY 10577.

Senior Software Engineer, Sebastian, FL. Research & development for application design of new products & guiding them to production; Contribute to the process of developing computer software at all levels, from designing user interfaces to implementing low-level computational algorithms. Requires: Bachelors in Comp Sci & 5 yrs exp., 8A-5P, M-F, 40 hrs, \$66,532.00 yr. Send resume to Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302, Re: Job Order #2120289.

Software Engineers (multiple positions) wanted by Info Technology/Software Consulting Firm in Richardson, TX for job loc in Wilmington, DE & various other sites throughout the US. Must have BS in Engg, Comp Sci or related field. Respond to: HR Dept, Nile Systems, Inc., 1750 N Collins Blvd, Richardson, TX 75080

Sr. Programmer Analyst and Systems Analyst wanted by computer services firm in Little Falls, NJ. Must have Bach. of Science degree in computer science and 2 years software experience. Send resume to: HR Manager, ISS Group, Overlook Towers, 150 Clove Road, Little Falls, NJ 07424.

Computer Webmaster wanted by Software Development & Computer Consultancy Firm in Miami, FL. Must have BS in Comp Sci & 2 yrs exp dsgng & dvlpg web sites using tools such as Corel Draw, Corel Photo Paint, Microsoft FrontPage, NetObjects Fusion and Visual Interdev. Respond to: HR Dept, Com-Pro Systems, Inc., 2200 NW 102nd Ave, Unit 4, Miami, FL 33172.

Network Engineer wanted by Co installing & maintaining Street Furniture for job loc in Englewood, NJ. Must have MS in CIS, Math, Engg & 2 yrs exp dsgng, implmtg & configuring multi domain Win NT networks. Respond to: HR Dept, JCDE-CAUX MALLSCAPE, 1 Cedar Lane, Englewood, NJ 07631.

An international consulting firm is seeking: **Programmer Analyst.** Software Engineers and Database Administrators. Exp with a variety of hardware and software packages. We offer a competitive salary, commensurate rate with exp., plus a comprehensive benefit package, including 401K, health, dental and education assistance/reimbursement. Send resume to: Primesoft, LLC, One Lawson Lane, Burlington, VT 05401. Tel: 802-658-7600 / Fax: 802-658-1090 Email: recruiting@primesoftgroup.com

Software Engineer wanted by California based Comp Consulting Co for job loc in Warren, NJ & throughout the US. Must have 7 yrs SAP exp. Respond to: HR Dept, Premium Consulting, Inc., 1669-2 Hollenbeck Ave, Ste 100, Sunnyvale, CA 94087.

Technical Project Manager Lead team of software engineers/programmers to design & develop computer software. Req'ts: MS or BS + 5 years post-BS experience in programming analysis. C/C++, Unix, Oracle, Developer 2000, Cobol, RDBMS. Experience must include 3 years as project manager. Company offers competitive salary and benefits. Job in S. Burlington, VT area. Reply to: personal@prosoft-tech.com or Prosoft Technologies, Inc., 45 Swift Street, South Burlington, VT 05403. Reference ad #201.

Multiple positions for IT professionals with NJ based IT firm as following:

Software Engineers: Masters in CS, Eng, Math, MS or eqv. with 2 years exp., as a Software Engineer or as a Programmer Analyst; Bachelors in C.S., Eng., Math, MS or eqv. with 5 years Progressive exp., as Soft Eng'r or as a Programmer Analyst.

Apply with two copies of resume to H.R. Department, Comptech Associates, Inc, 1205 Easton Avenue, Somerset, NJ 08873.

Senior Database Administrator wanted by Co involved in On-Line Compact Disk & Video Sales in Ft. Washington, PA. Must have BS or equiv. in Comp Sci, Mgmt, Info Sys or related field & 5 yrs s/ware exp or MS or equiv & 3 yrs exp in same. Respond to: C. Caminos, CDNow, Inc., 1005 Virginia Dr, Ft. Washington, PA 19034.

Full time Project Manager responsible for the development of new software and enhancements. Command of Crystal Reports and software packages including Word, Excel, P-Anywhere, Front Page, Visio, and various graphic packages. Provide software support to clients. Utilizing networking and website design and maintenance. Attend trade shows and expositions to promote software and services. Must have ten years of experience in the position or position with same duties. Salary: \$64,655/yr. Send resumes to: Bryan Amaral at ImageWare Technologies, Inc., 3340 Peachtree Road NE, Suite 1800, Atlanta, GA 30326.

OLAP Consultant. (5 pos. avail.) Analyze, design, develop, test, & implem. new & existing bus. info. sys. using Holog; provide multidimen. modeling sys. expertise for project scope & mgmt & train clients to use Holog. Req: 6 yrs progressively responsible exp. in info. systems s/w anal., design, develop., testing, & implementation, of which 18 mos shd be exp. w/ Holog. Inquiries to: Consultancy by Kingfisher, Inc., 5 Wieuca Trace, Atlanta, GA 30342.

Manager of Component Architecture (Software Development) sought by IT Dept. of legal publishing company in New York City to manage design and development of multi-tier object oriented systems, DCOM technologies; e-commerce solutions; & business modeling implementation. Resume to HR Dept., CCH Legal Information Services, 111 8th Avenue, New York, NY 10011.

Programmer Analyst. 8a-5p; 40 hrs/wk. Plan, prgm, implmt & integrate systems using C, Pro*C, PL/SQL, SOA, JAVA (JDK), JBuilder, Oracle Reports, Object View, Swing, JDBC, CORBA, Win NT & SOLARIS. Bach or equiv w/major in Comp Sci or Engg, Electronics or related branch of Engg. 1 yr exp in job offd. Job loc: Charlotte, NC. Send resume w/ref #003 to: HR, Youcentric, Inc., 6000 Fairview Rd, Ste 405, Charlotte, NC 28210 OR email to: resumes@youcentric.com.

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Consultant. Analyze business processes, configure business functions and design management reports. Work with SOA (Software OA) process, analyze customer and Business requirements and draft functional specifications with product management and engineering teams. Design and review SOA process for automating Testplans and determine acceptance criteria. Follow software and hardware defects using Error Reports and Bug tracking systems and communicate status with cross functional management team. Demonstrated ability analyzing business processes, configuring business functions and designing management reports. Demonstrated ability working with SOA engineering process and developing automated testscripts using tools such as Silk, QA Partner, Silk Performer. \$93,849/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 1 yr. exp. and M.B.A., Business Admin., rel. field/equiv. Send 2 resumes: Case #20003012, Labor Exchange Office, 19 Staniford Street, 1st fl., Boston, MA 02114.

Systems Analyst. Plan, develop & test computer programs & systems for advanced data comm., database management & technical applications using Unix Systems & other advanced software tools. Write documentation to describe program development, logic, coding & corrections. Develop software to deploy & upgrade complex client/server applications. Req: Bachelor's degree (or equiv.) in Comp. Sci. or Elect. Eng. + 2 yr. work exp in job offered or 2 yrs. exp. as Programmer/Analyst. Applicants must have proof of legal authority to work in the United States. Job/Interview site: Overland Park, Kansas. Salary \$60,000/yr.; 40 hrs./week, plus overtime (exempt). Please apply with a resume in hand to any local Kansas Job Service Career Center or send the job resume to: KS Department of Human Resources (#KS2300124) Attention: Jane Burbridge; 401 SW Topeka Blvd.; Topeka, Kansas 66603-3812.

SOFTWARE ENGINEER

Duties: Performance of software design and development in client server, internet and object oriented environments, in UNIX and WINDOWS operating systems using ORACLE RDBMS and JAVA. Education: Master's degree in Computer Science, Math, MIS, Engineering, Business or other quantitative or computational discipline. Experience Requirements: 2 years experience in the job offered. Salary: \$67,000 per year Work week: 40 hrs. All resumes must include the applicant's Social Security number and the Job Order number NC5703518 and DOT code 030.062-010. Interested applicants should apply to the nearest Job Service office or submit a resume to: Job Service, 742-F East Chatham Street, Cary, NC 27511

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support web-based application software systems in a client/server environment using C, C++, Java, HTML, JSP, Visual Basic, PowerBuilder, Oracle, CORBA, RMI, TCP/IP sockets, Weblogic, Websphere, Netscape Application Server and Servlets on UNIX, SUN Solaris and Windows platforms. Require: M.S. degree (or equivalent) in Computer Science, and Engineering discipline, or a closely related field, with three years of experience in the job offered or as a Programmer/Analyst; A.B.S. degree with five years of progressively responsible experience will be accepted in lieu of the M.S. degree and three years of experience. Extensive travel on assignments to various client sites within the U.S. is required. Salary: \$68,000 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to: Ravi Kendumalla, President, Everest Computers, Inc., 875 Old Roswell Road, Suite E-400, Roswell, GA 30076; Attn: Job KS.

Programmer Analyst Perform various phases of analysis, design, development, implementation, maintenance and enhancement of computer applications systems. Consult with clients to identify user needs and develop and maintain application written in COBOL, DB2, CICS, IMS/DC, FORTRAN, Oracle Forms, UNIFY under UNIX, MVS and similar operating systems. Will also be responsible for assisting with implementation of complete process; identifying, selecting, and designing various systems. Prepare projects, create data flow diagrams, define system functions, create process rules, develop screen and report specifications and application prototype. Masters Degree in Computer Science plus two years experience in job offered or in related field as systems analyst/programmer. \$54,400/yr., 40 hours/week. Qualified permanent U.S. workers are encouraged to apply for this/these position(s). Two resumes to Char Phoulavang; DWE-ALC; P.O. Box 7972, Madison, WI 53707-7972. Reference file #C101622.

At Razorfish, we provide strategic, creative, and technology solutions to some of the world's most successful digital businesses. We partner with our clients to plan, design, and build products and services that shape the way the world perceives and interacts with your company. We have openings for all levels in the following positions worldwide:

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BUSINESS ANALYST
INFORMATION ARCHITECT
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For more information about Razorfish and our career opportunities, please check out our website: www.razorfish.com. Qualified candidates, please forward your resume to: 101 Main St., Suite 9, Cambridge, MA 02142, or barbara@razorfish.com. Equal Opportunity Employer.

Oracle Applications Consultant: Job Location: Atlanta, GA. Duties: Analyze, design, develop & implement Oracle based solutions using Oracle applications, Developer 2000 & Designer 2000. Create custom code using Oracle PL/SOL to convert data from legacy system to Oracle application database and interface between Oracle applications database & third party software. Create custom reports using Oracle Reports and Develop forms using Oracle Forms. Requires M.S. (or foreign equiv.) in comp. or Info Sci., Eng. or related field and 1 yr. Exp. in job offered or 1 yrs. exp. as Consultant or Software Eng. Exp., which may have been obtained concurrently must include 1 yr. Exp. designing, developing & implementing Oracle based solutions using Oracle applications: 1yr. exp. using Developer 2000 and PL/SOL. EOE. 40 Hr./Wk.; 8:00 a.m. to 5:00 p.m. Salary \$80,000/yr. Send resume (no calls) to Diane Tuccito, AnswerThink Consulting Group, 817 W. Peachtree St., Suite 800, Atlanta, GA 30308. Must have legal euth. to work in U.S.

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Sr. Systems Analyst (Human Resources) [Three Openings] Configure, coordinate and facilitate implementation of SAP modules by analyzing human resources requirements & business processes and presenting alternatives for process design and redesign; map human resource requirements to SAP; identify problem areas in functional or technical implementation of R/3 software; perform configuration and prototyping; coordinate testing including unit, integration and stress testing; develop and provide team member & end-user training; implement SAP to client service functions using understanding of Human Resource (HR) SAP module and prototype business processes in SAP to identify, troubleshoot and resolve problem areas. Must have either Bach deg in Math, Comp. Sci., Engr., Business, Bus. Info. Systems, Hum. Resources, + 6 mths exp as Systems Analyst and 6 mths of exp. implementing human resources (HR) SAP module, OR without Bachelor's degree must have 2 yrs exp. as Systems Analyst, incl. 6 mths exp. implementing human resources (HR) SAP module. 40hrs/wk., 9:00am-5:00pm, \$105,000/yr. Apply at the Texas Workforce Commission, Dallas, Texas, or send res. to 1117 Trinity, Rm 424T, Austin, TX 78701, J.O.#0944396. Ad paid by an Equal Opportunity Employer.

Technical Professionals

Rapid growth IT company seeking experienced software engineers, Programmers and database professionals at all levels from the advanced degree to the non-degree with experience only. We want to hear from you if you have any one of the following skills:

- C/C++ Programming on UNIX Platform;
- UNIX systems skills i.e. shell scripting & System administration;
- Internet Programming i.e. Java, EJB, Javasevlets, Java Beans, ASP, HTML, XML;
- Database Administration (Oracle, Informix or Sybase) PL/SOL, E/SQL, I/SOL preferred;
- GUI including Visual Basic, VC++, PowerBuilder;
- Telecom/Wireless skills with WAP, WML
- Design, development, programming, support of client/server systems

Comprehensive benefits. Forward resume to Optech Consulting Inc., Attn: HR 17732 Preston Road, Suite 230 Dallas, TX 75252 E-mail: hr@optech-inc.com. An Equal Opportunity Employer.

Optech Consulting, Inc

BUSINESS SYSTEMS ANALYST to conduct effective assessment, analysis, maintenance and support of financial systems; Identify control risks and business risks associated with the financial environment; Monitor monthly accounting processing of financial applications such as billing, general ledger, revenue, A/R and A/P; Support and develop ongoing financial reporting and ad hoc analysis of financial data for senior management; Design and develop financial systems using understanding of the business processes, financial systems environment, system data integrity, analysis of data security, computer operation, information systems support and analysis development life cycles and maintenance, as well as Oracle financial applications, PL/SOL end Unix; Gather business requirements and prepare reports for management. Require: Bachelor's degree in Information Systems, Accounting, Finance, or a closely related field, with two years of experience in the job offered or in a related occupation in Information Systems or Financial Auditing. Salary: \$59,775 per year, 8:00 am to 5:00 pm, M-F. Send resume to: Toby Fletcher, Technical Recruiting, Mail Drop 42A, Equifax, Inc., 1550 Windward Concourse, Alpharetta, GA 30005. Attn: Job HK.

Compiler Developer (Software Engineer II) that will work as a member of a team to design and implement algorithms and analyses for compiler optimizations in company-developed compilers for PowerPC architecture; develop and/or implement dataflow analysis; Interprocedural dataflow analysis; and dependence analyses that are competitive with the Omega dependence testing system; algorithms include live range splitting techniques for global register allocation and reducing array bounds checks using partial redundancy elimination; design and implement compiler optimizations to interface with run-time libraries and implement backends for generating executable instrumented programs; utilize knowledge of computer architecture and compiler optimizations to support experimental research; independently provide support services for defect correction and maintenance of C, C++, and FORTRAN compiler products. Must have a Master's in Computer Science/Engineering or Electrical Engineering. Two years experience required as Compiler Developer or two years experience as a Compiler Developer/Research Teaching/Assistant/Software Engineer/Intern or any combination thereof. Experience to include: (i) developing and/or implementing dataflow analysis, interprocedural dataflow analysis and dependence analyses; (ii) implementing techniques for global register allocation; and (iii) designing and implementing compiler optimizations to interface with run-time libraries and implement backends for generating executable instrumented programs. 40 hours per week, 8:00 a.m. to 5:00 p.m., \$70,500 per year. Apply at the Texas Workforce Commission, Austin, Texas or send resume to 1117 Trinity, Room 424T, Austin, Texas 78701, JO#TX0944579. Ad paid by an Equal Opportunity Employer.

SENIOR ANALYST

This individual will design and develop computer programs using Virtual Memory System (VMS), Digital Equipment Corporation C (DEC C) and Application Control and Management Systems (ACMS), consult with users to determine user requirements and identify problems, assess the problems and needs of users to design application structures and document processes, create software and configure hardware commensurate with documented application designs, conduct studies, analyze test data and modify computer programs to ensure accuracy, respond to user inquiries, provide technical support after hours provide estimates for task completion and document program changes and re-configurations, protect software, hardware and data from damage, loss and manipulation. Will use knowledge of prototyping tools, proficiency in database architecture and design, and knowledge of recent computer and programming technological advancements. Bachelor's degree in Computer Science or related discipline required, along with two years of experience in the job offered or as a programmer analyst. Position located in Tulsa, OK. Interested applicants should submit resume to CIMS 7160, PO Box 33167, Tulsa, OK 74153-1167, EOE/M/F/D/V.

PROJECT MANAGER to plan, direct, and coordinate projects related to the design, development, testing, implementation, maintenance, and support of application software for financial and e-commerce industry clients using C, COBOL, Visual Basic, Java, Perl, PowerBuilder, SOL Server, Oracle, Crystal Reports, ERWIN and IIS on Windows 95/98/NT, Linux, and Sun OS platforms; Ensure that goals and objectives of projects are accomplished within prescribed time frame and funding parameters; Establish work plan and staffing for each phase of project; Confer with project staff to outline workplan and to assign duties, responsibilities, and scope of authority; Prepare project reports for management and clients; Confer with project personnel to provide technical advice and to resolve problems. Require: M.S. in Computer Science, Physics, Mathematics, or a closely related field, with two years of experience in the job offered or as a Software Engineer or Programmer/Analyst. Extensive travel on assignments to various client sites within the U.S. is required. Salary: \$80,000/yr., 8am to 5 pm, M-F. Send resume to: Raghavendra Kulkarni, President, Pro Softnet Corporation, 3235 Satellite Blvd., Bldg. 400, Suite 300, Duluth, GA 30096; Attn: Job SJ.

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This position is in the Senior Executive Service of the Federal Government and open to all qualified candidates. At a minimum, applicants must possess a bachelor's degree in an appropriate field of physical science, mathematics, engineering or computer science. A higher degree is desirable. Only candidates with demonstrated technical, managerial and leadership experience in the software engineering field will be considered. The full text of the announcement, with instructions on how to apply may be obtained at www.nasajobs.nasa.gov. APPLICATIONS MUST BE POSTMARKED BY 10-23-00. For further information contact Dianne Hagerty at (301) 286-8319 or dhagerty@pop100.gsfc.nasa.gov.

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Senior Support Engineer: Confer with clients to analyze problems with & suggest solutions for the Document Management Systems (DMS) software & the environment it runs on including: connectivity with SQL database, SQL database design & administration, SOL replication, backups, networking issues (including installation of Windows NT & Novell Networks), SOL server & file server configuration & administration, database schema design, performance tuning, moving data between SQL servers & troubleshooting, installations & upgrades of the DMS software. Perform programming using object oriented programming tools including C++. Assist in DMS software development by explaining software errors to the development team, suggesting enhancements & recommending changes to the program. Provide technical supervision to 4 support engineers with regard to DMS software upgrades, SOL Server performance issues & troubleshooting & installation of Windows NT & Novell Networks & DMS software. Must have a Bachelor's degree in Computer Science or Computer Engineering. Must have at least one year of experience in the job offered or as a Software Engineer. Experience as a Software Engineer must include 1) SOL database design & administration; 2) troubleshooting & installation of Windows NT & Novell Networks; & 3) Programming using object oriented programming tools including C++. Resume required. 40 hrs/wk, 9:30am - 6:30pm. Overtime required as needed. \$60,000/yr. Overtime pay exempt. Applicants must show proof of legal authority to work in the U.S. Send resumes to the ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, Illinois 60605. Attention: Shella Lindsey. Reference # V-IL 23954-L. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

TECHNICAL TEAM LEADER

Design and develop computer programs using Virtual Memory System (VMS), Digital Equipment Corporation C (DEC C) and Application Control and Management Systems (ACMS), consult with users to determine their requirements and identify problems in order to effectively design application structures and document processes create software and configure hardware commensurate with documented application designs, identify and create project tasks and manage teams by allocating tasks to co-workers, tracking their progress, resolving issues impacting task completion and reporting the team's progress to management, conduct studies, analyze test data and modify computer programs to ensure accuracy, respond to user inquiries, provide technical support after hours, provide estimates for task completion, document program changes and reconfigurations, and review relevant documentation for completeness and accuracy Track and document all source code changes required for software releases, correct program logic and monitor compliance with published programming guidelines. Will use knowledge of prototyping tools, proficiency in database architecture and design, and knowledge of recent computer and programming technological advancements. Bachelor's degree in Computer Science or related discipline required, along with two years of experience in the job offered or as a programmer analyst. Position located in Tulsa, OK. Interested applicants should submit resume to CIMS 7160, PO Box 33167, Tulsa, OK 74153-1167. EOE/M/F/D/V.

Software Engineer. Design, develop, analyze and implement client server based software applications using software development tools on multiple environments. Design and develop software programs using Object Oriented Design Patterns, Oracle, C, C++, PL/SQL, Pro*C. Demonstrated ability designing and developing software programs using Oracle, PL/SQL. Demonstrated ability working with C, C++, Pro*C. Demonstrated ability working on multiple environments Windows and Unix. \$76,252/yr. 40hr/wk. 9 a.m. - 5 p.m. Must have 1 year exp. (or 1 yr. Exp. in related occupation of Systems Analyst/Programmer Analyst) and M.S. in Comp. Sci., Eng., rel. field/equiv. Send 2 resumes: Case #20002792, Labor Exchange Office, 19 Stanford Street, 1st fl., Boston, MA 02114.

SENIOR SOFTWARE ENGINEER to design, develop, test, implement, maintain and support application software systems in an IBM MVS/ESA environment using COBOL II, DB2, CICS, JCL, TSO/ISPF, SPUFI, REXX, VSAM and SAS. Require: B.S. degree in Computer Science/Engineering, or a closely related field with five years of progressively responsible experience in the job offered or as a Programmer/Systems Analyst. Extensive travel on assignments to various client sites within the U.S. Salary: \$69,000 per year, 8:00 am to 5:00 pm, M-F. Send resume to: John Watson, Sr. V.P., Corp. Relations, Infotech Services, Inc. (d/b/a IMA plus), 9428 Baymeadows Road, Suite 500, Jacksonville, FL 32256; Attn: Job AO

Consultant. Design, code, test, debug & document complex software for management information systems using client/server technology. Database administration. Tools: Oracle, UNIX, SQL, Windows NT, Visual Basic, Powerbuilder. MS in Comp. Sci. + 1 yr exp in job offered or as Applications or Systems Analyst req'd. (*MS in any eng. field + 6 mos. software development exp also acceptable.) Previous exp must include: Oracle, UNIX, SQL, Powerbuilder. 40 hrs/wk, 9am-5pm, \$84,000/yr. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume & cover letter to Illinois Dept. of Employment Security, 401 S. State St.-7 North, Chicago, IL 60605. Attn: Arlene Thrower. Ref# V-IL 23182-T. Employer Paid Ad. No calls.

Database Administrator. Responsible for the integration of existing database applications. Create reports & macros & evaluate hardware w/particular emphasis on development of networking capabilities. Convert data from project specifications & statements of problems & procedures to create or modify computer programs. Apply knowledge in Access & MS SQL programs. \$60,000/yr. 40 hrs./wk.(M-F, 9:00 a.m.- 5:00 p.m.) Master Degree in Electrical or Industrial Engineering and 1 yr. exp. in the job or as e systems engineer required. Job site/Interview: Greenville, SC. Send two copies of your resume to: Ms. Regina D. Ratterree, E&T Technical Services, SCESC-SC2001114, Post Office Box 1406, Columbia, SC 29202

Sr. Software Engineer: conducted in Dallas, TX. Perform analysis, logical & physical DB design for client/server architecture, develop software systems on Unix & Windows using Oracle, etc. Use C, Pro*C, PL/SQL, etc. Lead 1-5 software engineers. Travel to & work at client sites for extended periods. Reqs. Bachelor's in Comp. Sci. or Maths, and 5 yrs exp. In job offered or as Prog/Analyst. 40hrs/wk. \$68,000/yr. Apply at Texas Workforce Commission, Dallas, Texas or send resume to 1117 Trinity, Room 424T, Austin, Texas 78701, J. O.#TX0944381. AD paid by equal opportunity employer.

Software Engineer. Design, develop, test and maintain software applications using Object Oriented Programming languages with distributed technology. Review requirement and functional specifications, test Web/Client applications using automation tools and work with custom objects extension functions. Demonstrated ability designing and developing Client Server Applications using Java, HTML, Visual Basic languages with SQL Server and Oracle as backend databases. One year experience working with QA automation tools such as Win Runner. \$72,425/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 5 yrs. exp. (or 5 yrs. Exp. in related occupation of Programmer Analyst) and B.S. in Comp. Sci., Eng., rel. field/equiv. Send 2 resumes: Case #20002956, Labor Exchange Office, 19 Stanford St., 1st Fl., Boston, MA 02114.

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support Oracle applications using object oriented programming, GUI tools, C, C++, SQL, PL/SQL, Oracle RDBMS and Developer 2000 tools (Forms, Reports) in a client/server environment under Windows and UNIX platforms. Require: M.S. degree (or equivalent) in Computer Science, or a closely related field, with three years of experience in the job offered or as a Systems/Programmer Analyst, Programmer; A B.S. degree with five years of progressively responsible experience in the field will be considered equivalent to the M.S. degree and three years of experience. Salary: \$70,000 per year, 8:30 am to 5:30 pm, M-F. Apply with resume to: International Strategic Business Solutions, 2255-K Spring Harbor Dr., Delray Beach, FL 33445, Attn: Job VK.

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Multiple openings for Computer Professionals. Candidates must have min. BS/MS or equiv. and experience in one or more of the following areas: Unix/Win NT/Novell Netware/LAN/Cisco Routers/ Lotus Notes, C/ C++/Java, Oracl/ Syb/ Informix/SQL Server (Dev/DBAs), Dev 2000, Oracle Apps (Fin/Manuf/HRMS), Powerbuilder/VB, Unix/Solaris/HP/Linux Admin, QA testers, WAN and Sequent Minis, Raid Systems using Veritas Volume Manager, Telecom/SS7, HTML/Java Script/ASP/Cold Fusion/Perl/CGI/Corba, Vantive. Please submit resume to: DB Concepts, 14 Summer Street, Malden, MA 02148. Fax: 781-324-2335.

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Enterprise Business Solutions**
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(508) 820-8661

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(508) 820-8217

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How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
 All staff members can be reached via e-mail using the form:
firstname_lastname@computerworld.com.

All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: letters@computerworld.com.
 Include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Subscription rates: U.S., \$58/year; Canada, \$110/year; Central and South America, \$250/year; all others, \$295/year

Phone (800) 552-4431
E-mail circulation@computerworld.com
Back Issues (508) 820-8167

REPRINTS/PERMISSIONS

Phone ... Ray Trynovich (717) 399-1900, ext. 124
E-mail rtry@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Maryfran Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT EDITORS

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Features Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Don Tennant (508) 620-7714
Assistant Business Editor Melissa Solomon (508) 620-7754
Assistant Technology Editor Tommy Peterson (508) 620-7729
Washington Bureau Chief Mitch Betts (202) 347-6718
West Coast Bureau Chief Pimm Fox (650) 524-7116
West Coast Editor Mark Hall (503) 391-1158

REPORTERS

Mobile computing/wireless Bob Brewin (301) 277-8069
Internetworking, telecom/wireless, defense and aerospace James Cope (219) 273-5369
Application development, Java, automotive Lee Copeland (773) 394-0402
Careers, labor issues, outsourcing, application service providers, health care Julekha Dash (804) 295-9512
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Security, encryption, viruses Ann Harrison (650) 524-7117
Business-to-business e-commerce Julia King (610) 532-7599
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Microsoft operating systems and BackOffice, retailers Carol Sliwa (508) 628-4731
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State/federal government, antitrust, legal issues, politics Patrick Thibodeau (202) 333-2448
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B2C e-commerce and technologies, databases, data mining, Web infrastructure Dan Verton (703) 321-2277
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Web server technology, security, heavy manufacturing Todd Weiss (717) 560-5255
General assignment, Linux and Unix operating systems

OPINIONS

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Business Feature Editor Thomas Hoffman (845) 988-9630
Reviews Russell Kay (508) 820-8175
Technology Evaluations Editor Robert L. Mitchell (508) 820-8177
IT Management Rick Saia (508) 820-8118
IT Careers David B. Weldon (508) 820-8166

FEATURE WRITERS

Gary H. Anthes (202) 347-0134;
 Matt Hamblen (508) 820-8567;
 Kathleen Melymuka (508) 628-4931;
 Kim S. Nash (773) 275-4133;
 Mathew Schwartz (508) 820-8285
 Deborah Radcliff (707) 829-5823

RESEARCH

Mari Keefe, **research manager**;
 Lisa Sydney, **online researcher**;
 Allison Wright, **research associate**;
 Jennifer McBride, **research intern**

CDPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202;
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ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176);
 Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139);
 Gussie Wilson (650) 524-7035, **editorial assistants**

COMPUTERWORLD ONLINE

Tom Monahan, **director, online and design** (508) 820-8218;
 Sharon Machlis, **managing editor/online** (508) 820-8231;
 Craig Stedman, **online news editor** (508) 820-8120;
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CONTRIBUTING COLUMNISTS

Allan E. Alter, Joe Auer, Jim Champy, John Gantz,
 Dan Gillmor, Peter G. W. Keen, Bill Laberis, David Moschella,
 Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

Leslie Goff, Amy Helen Johnson

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Priceline

for thinking low prices and glitzy packaging alone would pave the way to profitability.

Approximately 70% of Priceline's business comes from the sale of airline tickets. Airlines sell their difficult-to-move seats via Priceline at rates below their usual published fares. Yet Priceline often requires travelers to make multiple connections or fly at undesirable times to achieve those savings.

Customers must also agree to buy a ticket at a given price before they know the airline or time of departure.

"In the process, it's almost become a nefarious brand name," said Henry Harteveltdt, an analyst at Forrester Research Inc. in Cambridge, Mass.

He said Priceline's focus on letting customers name their own price has neglected customer service. "You have to support what you sell, and Priceline's been weak in that area," Harteveltdt said.

Krista Pappas, an analyst at

Gomez Advisors Inc. in Lincoln, Mass., said Priceline may have capitalized on the first wave of Internet commerce, but it failed to keep up with the pace of innovation.

"New business models have come along, and now Priceline's sort of dated," she said. "You don't live long on the cutting edge these days."

One of those business models is San Francisco-based Hotwire.com, a beta site due to launch by month's end.

Hotwire is owned by many of the airlines that have been selling via Priceline. Harteveltdt said he believes those airlines will gradually reduce the number of seats they make available to Priceline, leaving it struggling to deliver products to its customers.

Priceline spokesman Brian Ek said the company still intends to expand into new markets, including business-to-business auctions and insurance. He also said the company believes

it can retain a strong customer base because people surfing the Web for tickets will always stop at Priceline to see if it can beat their best price.

"Ultimately, what's going to carry the day is going to be brand, and who's got the brand?" Ek said.

Yet Fay Landes, an analyst at New York-based Sanford C. Bernstein & Co., said she thinks that Priceline's business model has it skating on very thin margins. "How are they

ever going to make money off of cheapskates?" she asked.

Priceline went public in April of last year, and its stock was trading at \$165 per share within a month. The company built its name on innovation and consumer-driven pricing. Yet, Harteveltdt said, "their time in the sun is over."

He said Priceline can right itself and chart a course to profitability, but "the ongoing livelihood of the company is going to depend on the business decisions they make" over the next year.

Heath Terry, an analyst at Credit Suisse First Boston in San Francisco, said Priceline needs to redefine objectives when it makes quarterly earnings public Nov. 2.

"Investors need to know that management has plans. Are they going to focus on travel, or are they looking to expand?" he said. "But they'll need to see something more than what's there at the moment." ▸

A Downward Price Line

After gaining brand-name recognition and spending some time as a Wall Street darling, Priceline.com has seen a precipitous drop in its stock price.

SOURCE: FIRST CALL/THOMSON FINANCIAL, BOSTON



Continued from page 1

Security Rules

involved in implementing the rules, and "when you add up those collective costs for a big organization, it's clearly in the millions of dollars to get [compliant processes and systems] up and running," said Bill Bradway, an analyst at Meridien Research Inc. in Newton, Mass.

As such, company officials are urging regulators to instead issue the security requirements as guidelines, not regulations, thus giving financial institutions flexibility to tailor information security programs to their specific needs.

"The financial services community has repeatedly shown leadership in the security area," said Edward Schwartz, chief information security officer at Nationwide Financial Services Inc. in Columbus, Ohio. "Wouldn't it be reasonable to say [to regulators], '..."

Let us try to do it in such a way that doesn't have an unnecessary financial impact on our business?'"

The pending rules are a requirement of the Gramm-Leach-Bliley Act, the sweeping financial deregulation legislation approved last year that allows banks, insurance companies and securities firms to merge. The act requires regulators — in this case, the Federal Reserve, Federal Deposit Insurance Corp., Office of the Comptroller of the Currency and Office of Thrift Supervision — to write rules aimed at safeguarding customer information.

No Date Set

The new rules are due to take effect in July. But regulators have yet to issue final rules, and agency officials haven't said when they will be completed.

Meanwhile, officials at financial services companies are considering how the rules will affect them.

Blaise Bettendorf, chief financial officer at The Summit National Bank in Greenville, S.C., a regional bank with \$200 million in assets, has been getting price quotes from vendors to find out how much it would cost to have regular systems testing conducted by independent third parties, a potential requirement of the new rules for banks and other institutions. So far, she said, the price quotes have been "hefty," ranging from \$20,000 to \$80,000, she said.

Companies that have well-defined, integrated IT architectures will be in a better position to comply with the regulations than will organizations with a hodgepodge of systems that have been cobbled together through a string of acquisitions, said Bradway. "Organizations that have not yet completed their consolidation to a common architecture may be looking at the same problem times 10," he warned.

At Nationwide, which has

\$115 billion in assets, a rule requiring data encryption could add overhead to network bandwidth and server CPU, said Schwartz.

Encryption requirements may also impede data transfers by making the already difficult job of interfacing with a plethora of different systems "very complex," he said.

More important, Schwartz said, any need for encryption "may have already been mitigated by all the other [security] controls that we do as a matter of course." He said he wants the federal rules to offer that flexibility.

"Institutions want to have some guidance from regulators, but they don't want to be boxed in by them," said Charlotte Bahin, regulator affairs director at America's Community Bankers, a Washington-based trade group. "They want to be able to incorporate the elements of the security plan that would be most appropriate for them." ▸

Priceline's Gas, Grocery Licensee To Shut Down

WebHouse Club, a licensee of Priceline.com Inc. offering name-your-price service for gasoline and groceries, said last week it will go out of business in 90 days.

The Greenwich, Conn.-based company said it didn't anticipate being able to raise the necessary capital to keep its business going and achieve profitability. Its \$70 million in cash reserves and working capital will be "more than sufficient to satisfy all obligations to customers, employees and suppliers," WebHouse Club said in a statement.

Customer service at WebHouse Club will remain fully operational until the company shuts down, the statement said. All customers with unredeemed gas and grocery purchases will receive a full refund of any pre-paid amount and extra money to cover the estimated savings for gas and groceries.

WebHouse Club served 2 million grocery and gasoline customers, 7,200 grocery stores, 6,000 gas stations and about 125 consumer packaged goods manufacturers.

Rob Leathern, an analyst at Jupiter Communications Inc. in New York, said Wall Street hasn't been very tolerant of allowing start-up online businesses to build from their core.

"It didn't offer a value proposition to consumers and manufacturers," said Rob Rubin, an analyst at Forrester Research Inc. in Cambridge, Mass. Consumers would save money initially but save less the more they used WebHouse Club, he said. Manufacturers didn't buy into the service because consumers were purchasing products based on price, not brand, Rubin said.

WebHouse Club didn't return calls by press time.

The bad news continued for Priceline. Another affiliate, Perfect YardSale Inc., has ceased operations. Perfect YardSale offered used merchandise to consumers at Priceline's Web site. — Kathleen Ohlson



FRANK HAYES/FRANKLY SPEAKING

Rewriting the rules

WAL-MART CLOSED ITS WEB STORE for remodeling last Monday night. Visit Walmart.com in the next few weeks and all you'll see is a letter from the company's CEO telling you to come back once the dust has settled. This is, of course, not The Way It's Supposed to Be Done. One e-retailing analyst promptly pronounced the shutdown "an insanely bad idea." Another pundit sarcastically smirked, "A wonderful stroke of genius."

We all know what the official playbook says about situations like this: You keep the old Web store online, then cut over when you're ready with the new site. We take it for granted that's the One Right Way to do it.

Of course, that official-playbook approach is exactly what Wal-Mart used when it redesigned its site last year. That project was, to put it bluntly, a disaster. The site was supposed to be done by October. It didn't actually launch until January. So much for the biggest shopping season of the year.

Then the new site got lousy reviews from both customers and critics such as Gomez Advisors: too many layers and clicks, not enough product information, too hard to check out. So much for Wal-Mart's big new e-retailing initiative.

Within months, the company was looking for a way to dump the newly launched design. Wal-Mart finally ended up this July buying HomeWarehouse.com for its Web-store technology. That's also when the company hatched its plan to pull the plug on Walmart.com during the transition.

So much for the official playbook. We all love that playbook, don't we? We love its universal rules that make perfect sense. We love its time-tested directives that spell out exactly the right thing to do for most e-retailers, most of the time.

It's easy to live by that playbook. If we're not careful, we'll get sucked into believing that it's always right.

But the playbook is based on some crucial assumptions. It assumes you've got a pretty good e-business you're just trying to make better. It assumes you've got enough customers that you don't want to risk losing them. It assumes you've got something worth building on.

Which in Walmart.com's case is probably wrong on every count. There's nothing worth

saving — not the site, not the trickle of customers, not the technology. So they've bulldozed it.

The playbook also assumes e-retail is the business. For Wal-Mart, that's certainly not true — all those real-world stores will keep the cash flowing and the brand very much alive no matter how long the Web site is off the map.

And the playbook ignores a key reality of corporate IT politics: As long as you've got a Web store up — even a creaky, clunky piece of junk — you don't face real heat if the schedule slips. A few weeks or a few months late? Big deal — the old site is still running.

That kind of complacency burned Walmart.com the last time around. It's the same deadly complacency that screws up too many projects, on and off the Web.

But not for Walmart.com — not anymore. The old site's gone. Now they're working without a net. They're committed. This time, they miss the selling season, and they're dead.

Jeanne Jackson, Wal-Mart's online CEO since April, used to run The Gap's online and catalog businesses, and she turned around Banana Republic from a dead-end safari-clothes chain to a hot retailer. She knows retail and e-retail. She knows the playbook as well as any e-retailer alive — and she's the one behind throwing it out and pulling the plug on the old Walmart.com.

Maybe she's right. Maybe she's wrong.

But you can bet that right now, everybody at Walmart.com is racing the clock to get the new site online — and nobody's taking anything for granted. ▀

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

A few weeks or months late? Big deal — the old site is still running.



SHARK TANK

NEW-TO-THE-JOB network administrator pilot fish walks into the computer room after a power outage during his first week on the job and finds all the servers rebooting. Wait, hold on — don't we have an uninterruptible power supply (UPS)? he asks another staffer, who points under a table to the UPS lit up and humming along. The fish climbs under the table to check the back of the UPS — and discovers that none of the servers are plugged into it.

APPLICATION SUPPORT manager sticks her head into the IT operations manager's office and asks if he can provide a "complete list of all the unplanned outages for the next six months," reports a pilot fish who was there. The ops manager patiently asks the support manager to consider what she's just requested. She does — then replies that she sees "nothing wrong with asking when we were expecting the next unexpected outage."

NEW MONEY-SAVING manager decides to use an in-house support technician to replace the consultant who has supported a remote facility for years. She's the logical choice — "the only computer-literate person there," says a co-worker pilot fish. Trouble is, she's a PC support tech, and the application is on a mainframe. "She doesn't know the operating system, the database, the language or how it works,"

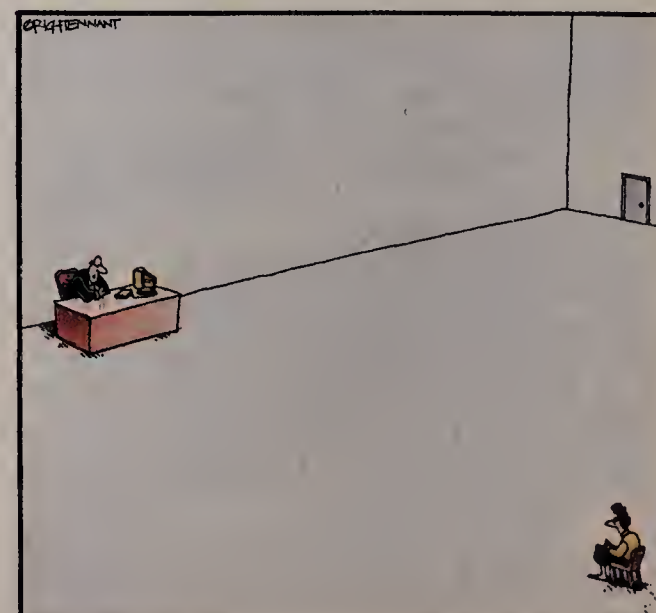
groans the fish. No problem, says the boss — we'll send her to training. "She should be able to take over by January, right?"

PROGRAMMER PILOT FISH who also helps out with system administration suddenly can't access one network drive. He pings the server; no response. Suspecting the server has blue-screened, he heads for the computer room, opens the door and finds the head sys admin sitting on the floor, a fistful of wires in his hand — and swearing he "had nothing to do with knocking loose the network connection to the NT cluster."

ELECTRICIAN SHOWS UP one morning to deal with a potentially serious problem: the big red emergency button that shuts down all computer-room power appears to have gone dead. After a little careful testing, he determined that it's nothing major, just a burned-out lightbulb behind the button. But to be really careful, the electrician tests all the button's other connections and accidentally completes the button's circuit. And brings down all the servers. "Hard, really hard," says a pilot fish. "The rest of the company can't figure out why their applications quit responding."

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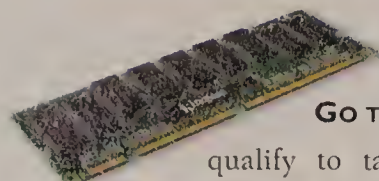
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